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No.46
Jan 24-30, 1984

40p

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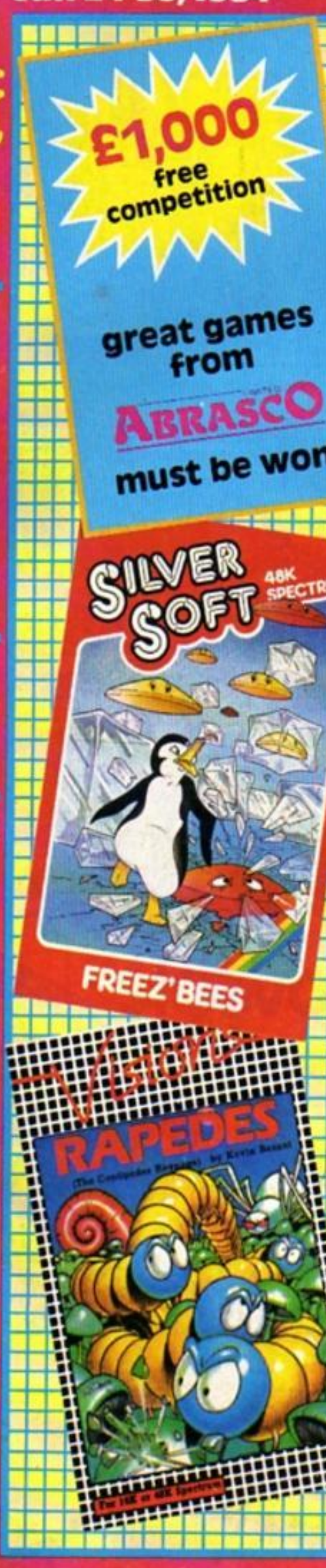

Software while you wait

Cartridge software at the press of a button will be in the shops next month, bringing cut prices and a halt to piracy.

If successful, it could mean a big shake-up in the way software is now distributed on cassette, cartridge and disc.

Retailers will each have a terminal, based on IBM's Personal Computer, to load blank cartridges with the customer's choice of 400 programs — while he waits.

Each terminal will be linked to a host IBM PC which will download new titles to a hard disc via telephone lines and take care of invoicing and royalty payments.

Continued on page 5

Sinclair in profits talks

Sinclair Research took a total of 400 phoned orders for the new £399 QL micro in the two days after its launch.

The news will interest big City investors, reported to be unhappy about disappointing half-year results.

According to one commentator, these would do well to go above last year's £14m.

They sought reassurance — and this led to a 90-minute breakfast-time meeting behind closed doors last Thursday week.

Continued on page 5

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After sales shock

I write with the intention of making other Commodore users aware of the attitude of that company with regard to after sales service.

In July 1982, after gathering all available information, I purchased a VIC-20 plus cassette deck plus 16K RAMpack from a local supplier, and was completely satisfied in the ensuing months buying a large amount of software and adding a 1515 printer as well.

However, in October 1983, a fault developed in the RAMpack and I took it to the local supplier requesting repair of same. I was astounded when informed that an item which had cost £75 less than 15 months previously, was beyond repair.

Thinking I had probably just been unlucky with my particular supplier, I wrote to Commodore themselves giving a complete history and asking for their advice.

It took a while for them to reply and I was extremely disappointed as in their opinion I should purchase a replacement costing approx. £48 as nothing could be done regarding the original as the guarantee period has elapsed.

They did however mention that they were surprised that a normally durable item should have failed so early in its life.

I have written again to Commodore on this subject but I do not expet a reply, and I therefore ask that you print the essence of my experience with what must now be considered a throwaway product for other unsuspecting users.

I have obtained a replacement 16K RAM to enable the use of VICwriter but, needless to say, it is not from the Commodore stable and cost much less than £48.

F. E. Wilkes, Merthyr Tydfil, Mid Glamorgan

Julian Taylor, for Commodore, said: "Unfortunately, there's nothing Commodore can do outside the warranty period, because these cartridges can't really be repaired. I must say that though there are exceptions to any rule, very few cartridges have been returned to Commodore as faulty."

Two space games with a difference are in this issue. There's a Spectrum listing on page 23 and one for the BBC starting on page 29

More commands for your Commodore 64, including easy-to-use text, sprites and sound. Just type in the listing which starts on page 17

Arcade games, adventures, utilities, educational programs ... they're all reviewed in Home Computing Weekly, the magazine that reviews more software than any other weekly

Find out about the new Commodore computers on our news pages

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While you wait

From front page

The system, called Romox, is being imported by Prism Technology from America, where 500 terminals are already in use.

Managing director Bob Denton said once computer users had bought their first programs, re-loading the cartridges would cost as little as £5 a time.

At first Romox, which has slots for 10 different cartridge types, would offer software for Atari computers and games players, VIC-20, Commodore 64, TI-99/4A and IBM PC. Cartridges for Sinclair's Spectrum and QL and for the new computers using the MSX standard would follow.

The first 20 terminals, to be installed in High Street chain stores, would offer 300 titles, almost all from America.

He said Prism was approaching UK software houses for their titles and planned to have 300 terminals installed by next Christmas.

By then he expected to have done £12m-worth of business with the Romox system.

Customers will be able to browse through a catalogue and see their choice on the terminal before having it loaded onto a cartridge suitable for their machines.

It also means that programs can be rented without fears of copying.

Mr Denton said the advantages of retailers included not having to keep stocks of anything except blank cartridges, technically ECPCs, Edge Connector Programmable Cartridges.

New titles could also be imported and exported via a satellite link free of tax.

Mr Denton said he believed that in future software would be released in the same way as films. First, new titles would go on sale through Romox, followed by cassette, cartridge or disc and then through a system like Micronet 800, which Prism runs with British Telecom.

Prism has also brought out two robots — with another to follow — which can be controlled via computer keyboard or joystick and made to trundle around and "speak" as well as other functions.

FRED (Friendly Robotic Educational Device), which will cost about £200, stand 12in high and can perform on floor or table top, instructed by a portable infra-red controller, supplied, or computer keyboard or joystick.

It can move at 5ins a second and, using a pen attachment, can be made to copy the screen onto paper.

There is a 45-word vocabulary, expendable, and power comes either from standard batteries or optional rechargeable pack. FRED is due on sale in April

TOPO, controlled in the same way, is over 3ft tall and will cost about £1,500 when it goes on sale next month.

Text is sent from the computer keyboard to TOPO's speech system and, says Prism, it can say virtually anything as well as storing the information.

It can be "taught" to move around, on two independently-driven wheels at 2ft per second, and can then repeat the movements. The on-board battery runs for three hours before recharging.

BOB XA, priced at about the same as TOPO, will be on sale in March-April, offering variations on the TOPO features.

Prism says that software for TOPO and FRED is at present available for the Apple II.

Software for BBC, Commodore 64 and Spectrum was on the way and programs for other popular makes would be worked on this year.

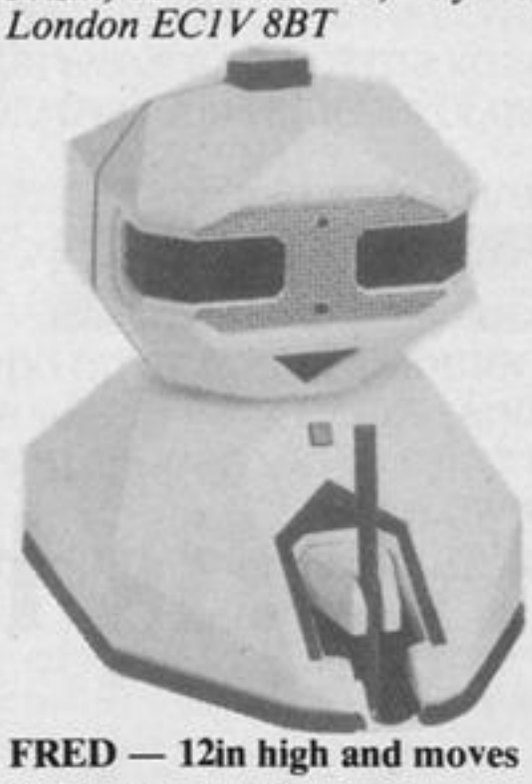
Prism also planned to design its own peripherals, both sensory and manipulative.

Known as Androbots, and imported from America, Prism says the robots can be used in education, for business promotion and for games at home.

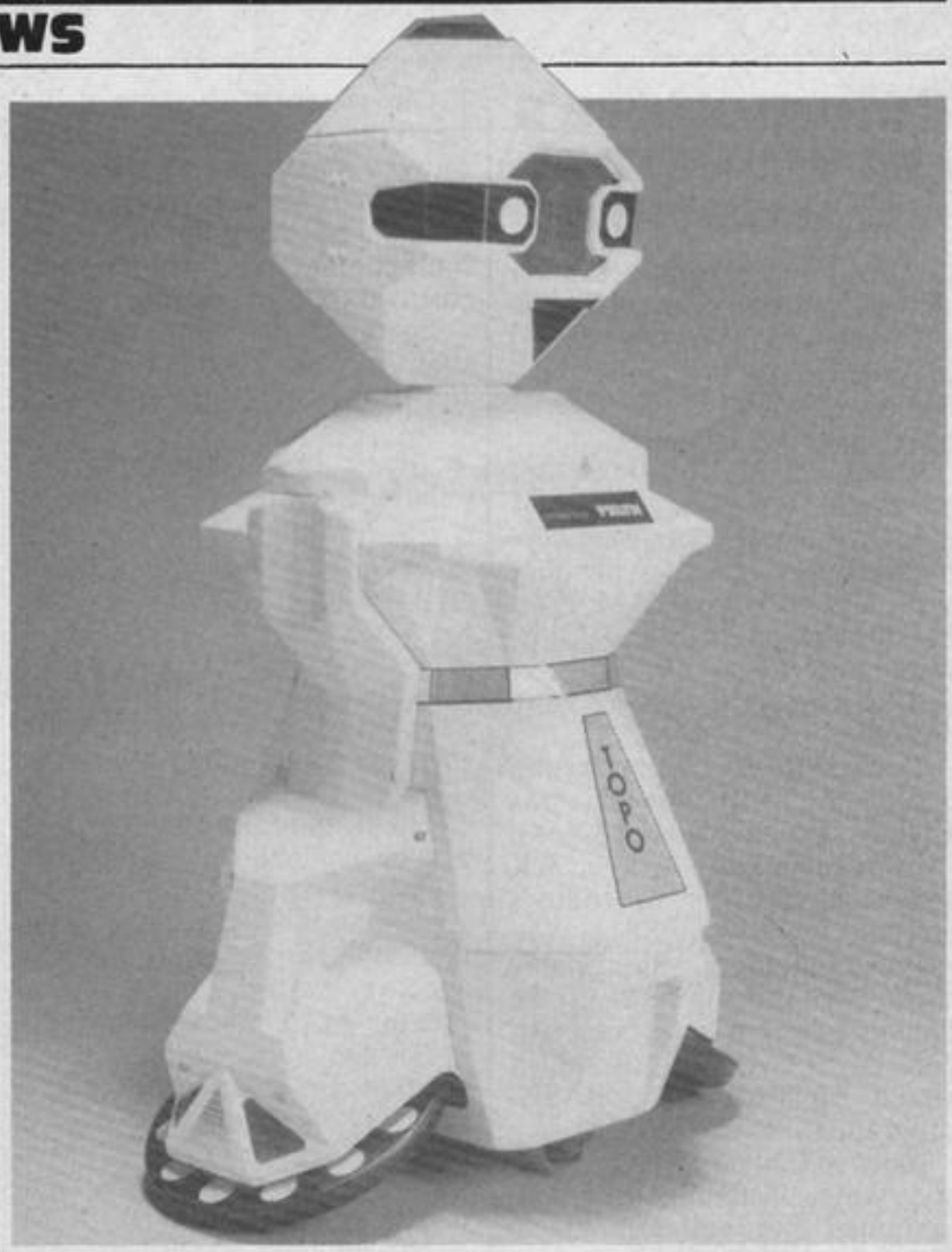
They predict future applications will include security and intruder detection, fire and smoke detection, vacuuming and lawn mowing, helping invalids and for control applications.

● Prism is launching a £1,000 portable business computer, called the Wren, which includes four software packages and a built-in auto-dial modem. Designed by Prism and Transam and made by Thorn EMI Datatech, it has 64K of RAM, 7in amber screen and two 5¼in disc drives.

Prism, 18/29 Mora St, City Rd, London EC1V 8BT



FRED — 12in high and moves at 5in per second



TOPO costs £1,500 and can be "taught" to repeat a series of movements

Sinclair profits

The new QL computer — aimed at businesses and serious users

From front page

About 40 representatives of big City institutions, like pension funds, heard from Sir Clive Sinclair and managing director Nigel Searle shortly before the QL's official launch.

Most of their worries were apparently allayed, but the prospect of Sinclair Research becoming a public company this year is now seen as in doubt.

Supply problems, price cuts by other computer makers and cost increases have led to the fears.

Half-year figures to the end of October showed that the previous year's 65 per cent growth would not be repeated.

Sales went up by 60 per cent, to £37m from £23m, but costs rose by 85 per cent. So pre-tax profits were £4.4m against £3.8m — slightly lower than before after tax.

Optimists among analysts predict full year profits of £14,026,000, perhaps lower.

Sir Clive Sinclair, who still owns most of Sinclair Research, became a paper multi-millionaire last year when a small number of shares were sold at £34 a time, valueing the company at £136m.

The hope is that QL will be produced in sufficient quantity to hit sales targets and that the new pocket-sized TV will together boost growth.

Sinclair Research, Stanhope Rd, Camberley, Surrey

Sorry!

Our apologies for the paper quality of last week's issue — it wasn't our fault! As you can see, we're back to the top quality coated paper you have come to expect from us.

Commodore's new micros: the details

Commodore will soon decide on its next home computers for the UK from a range just previewed in America.

First, reaction from the trade is being assessed.

Theoretically, the choice can be made from six different models, made up of three keyboard styles and two memory sizes, 32K or 64K or RAM. Each has the option of built-in software on ROM.

Two factors narrow the choice..

Commodore's UK marketing director, John Baxter, has already said he does not want a "toy" keyboard. And a 32K model is unlikely in today's market.

So Commodore will probably show two final models at the Hanover show in April, both with 64K of RAM, 60K of which would be useable for BASIC programs.

One will have 67 typewriter style keys, including four programmed and reprogrammable functions keys and four cursor keys. These are arranged in a diamond and shaped as arrows.

The second model will have an additional 19-key numeric keypad to the right and more ROM to handle speech.

In a break with tradition, the new models will not be language-compatible with earlier micros. There will be a new BASIC 3.5, offering more than 75 commands, and the 7501 processor, with .89 to 1.76MHz clock.

This processor is an enhanced version of the 6510, used in the Commodore 64, which in turn was a development from the 6502.

The advantage of the 7501 is that it can handle up to 128K of ROM, but uses the same 6502 instruction set.

One observer who was at the Las Vegas Consumer Electronics Show where the prototypes were previewed said, however, that they did not have the 64's sprite handling or sound features with just two tone generators.

So far, Commodore has said that users will be able to choose one of three built-in ROMs:

- Magic Desk, for home calculations and filing
- Word Processor, with calculation features
- 3-PLUS-1, for "serious" users, which includes spreadsheet, word processor, file manager and graphics

These, and future releases, will also be available on cartridge.

Both computers are charcoal grey. One is 13¼in wide, 2½in high and 7¾in deep and its bigger brother is wider, at 16⅝in, because of the numeric keypad, 2⅝in high and 9⅜in deep.

These are the features which both models share:

Screen: 320 by 200 pixels in high resolution — using 10K of RAM — 40 columns by 25 lines text with split screen feature to handle both. Upper and lower case, 128 colours — 16 colours multiplied by eight luminance levels — reverse and flashing, PET graphics characters

Sound: two tone generators or one tone and one white noise generator, and eight levels of volume

Input/output: user port — narrower than the 64's — serial port, ROM cartridge and parallel disc drive port, two joystick ports, cassette interface, RF output, monitor, audio input/output, power supply.

The serial port is compatible with present Commodore products but it is possible that the user port may be omitted for lack of room, according to a Commodore source.

Commodore's C264 — with four wide function keys above the keyboard and arrow-shaped cursor keys set in a diamond shape

There will be a new-style cassette deck, the 1531, which will have a smaller DIN plug instead of the present edge connector.

And there will also be a new and faster 5¼in single floppy disc drive made in Japan by Newtronics, a company jointly owned by Commodore and Mitsumi. Production is expected to reach 50,000 a month by June. A dual drive follows.

Both models also have a built-in machine code monitor with more than 12 commands.

Apart from the keyboard and slight design changes, the main difference between the two is that the more expensive model has 48K of ROM instead of 32K.

The additional 16K is to handle speech — more than 250 words are included and more can be added with cartridges or discs.

The upper-range model is called the CV364. The last two figures indicate RAM size, the figure 3 denotes the extended keyboard and the V is for the speech capability.

For the same reasons, the other model has the code C264.

If Commodore chose to, it could produce a model C132 which would have a "toy" keyboard and 32K of RAM.

No UK launch date has been decided but, with final models shown in April, summer is the most likely time for deliveries in bulk.

Among the BASIC commands in the new models, all new to Commodore are:

BOX for graphics
CIRCLE
COLOR
DO WHILE
DO UNTIL
DRAW
ERR$ error trapping
GET KEY waits until key pressed
GRAPHIC selects graphics mode
GSHAPE defines graphic
INSTR string handling
JOYstick
KEY defines function key
LOCATE
PAINT
PRINT USING text formatting
PUDEF define format for above
ARC CLEAR
RENUMBER
RESUME data statement handling
RGR
RLUM both graphics commands
SOUND
SSHAPE similar to envelope
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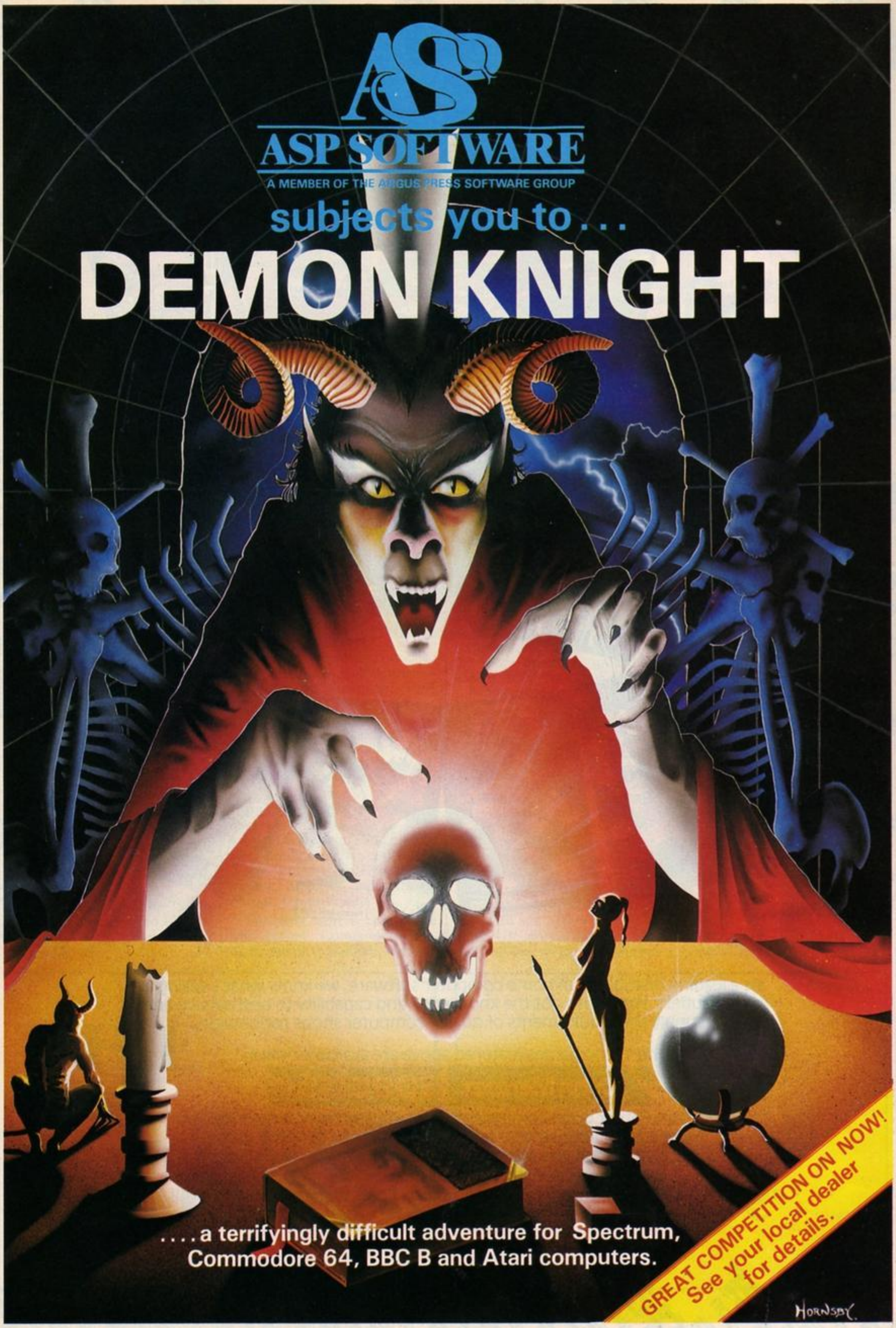
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What's new at the big Las Vegas show

Our man in America, Bud Izen, reports on what he found at the Consumer Electronics Show

The first and most lasting impression that hits you as you enter is the sheer size of this show. Imagine 20 American football fields (each about 30 yards by 100 yards) filled with the latest electronic gadgets. That is roughly the floor size.

What is even more amazing is that this is a trade show; it is not open to the general public. This year about 80,000 people attended during the four days.

There is virtually no way to see everything. In addition to the floor space at the convention centre itself, the convention areas of three other major hotels were also utilised.

Of primary interest to many were sales figures and forecasts for 1983 and 1984. The Electronic Industries Association keeps careful statistics on virtually every aspect of the industry:

Year total sales to dealers in thousands of units/Factory Sales in $Millions

Home Computers		
1982	2,000	1,300
1983	4,800	1,950
1984 (proj)	6,800	2,750
Home computer software		
1982	n/a	250
1983	58,000	1,050
1984 (proj)	88,500	2,200
Programmable video games		
1982	8,200	950
1983	6,650	760
1984 (proj)	5,000	450
Video game cartridges		
1982	60,000	1,200
1983	75,000	1,400
1984 (proj)	74,300	1,500

Market Penetration (% of homes) at the end of 1983:

Programmable video games	21 per cent
Home computers	7 per cent

It is amazing to see how much dollar volume is being generated by an industry which has so far only penetrated into seven per cent of all American homes! Home computers and related software are now selling more and generating more dollars than video games machines which have been around longer and are in three times the number of homes. This seems to clearly indicate that lots of people are getting tired of doing nothing but playing games. About time too.

Something else that was about time in coming is a new television program that was just announced at the show. Called The New Tech Times, it will be aired weekly on the Public Broadcasting System, our only form of viewer-sponsored commercial-free TV.

The focus and purpose of the program will be to give consumers a way to handle their problems with new technology. Viewers will be able to "talk back" to their sets; using a modem and the CompuServe bulletin board system.

● **The nicest looking software in the best package**

The first item was, of course, the Coleco Adam. I talked to several Coleco reps, who expressed an honesty and optimism that seemed genuine. They obviously really believe in the product and also firmly believe that the problems that occurred when the first run of machines were released has been remedied. They also admitted that the problems (bugs in some of the software, quality control and documentation problems) did exist, which is refreshing coming from an industry that usually consists of nothing other than completely perfect products, even though we all know otherwise. I saw the new documentation, and it does seem simple and clear.

The machines are now rolling off the assembly lines in New York, although they expect demand will exceed supply for a considerable time. So much so that even America's largest retailer, The Sears chain, will be hard pressed to fill orders in less than three months.

Sol Davidson, U.S. general manager of Commodore, said his company was not worried about the Adam in the least. As far as he was concerned, the Commodore booth was (metaphorically speaking) the only booth at the show. Contrary to rumours, Commodore had no plans to market a competitive package nor to reduce prices merely because of the Adam or any other computer. He felt Commodore was end-user oriented, meaning that they felt highly committed to their users and do not wish to dictate to them.

He objected to the concept of a factory-determined integrated system because it locks out versatility by definition. He said that one of the main characteristics of Commodore machines is that they are unlimited in their potential applications thus allowing end users to completely design their own systems for their own specific purposes.

One of the more versatile and impressive of all the Apple clones will probably be coming your way soon. Called the Laser 3000, it is made by Video Technology, of Hong Kong, and is expected to retail for about $600 here, and its equivalent in pounds in the U.K. It is about 80-90 per cent compatible with existing Apple software.

The company has not stolen any proprietary routines from Apple, so it will not run any software that makes direct ROM monitor calls.

● **Mark Eyles and Carl Ziegler from Quicksilva — nice accents**

The product itself looks very good, and was on display doing a number of impressive things. It runs at twice the clock speed of the Apple II, can support up to 192K RAM through bank switching, will address twice as many pixels in graphics mode as the Apple (560 by 192), comes with a built-in parallel printer port, includes both 40 and 80 column display, has an 81 key full-stroke keyboard with a nice feel, has a separate numeric keypad, includes eight user-defined function keys, will generate four separate sound channels, will support virtually every Apple add-on or its equivalent as available from Video Technology (modem, data cassette recorder, joysticks, floppy discs, Z80 card, 8088 card, light pen, printer, plotter, and RGB monitor to name but a few).

It will absolutely support every language that the Apple II can, and every major software package that the Apple II can run. I was definitely impressed.

Elan obviously needs no introduction to you; it was certainly getting a very professional introduction to us, although I think they might have made a slight marketing error by using an American voice-over rather than an English one behind their video presentation.

Everyone over here seems to love the foreign expert, and especially ones with British accents.

I did find it odd that Elan was not planning to introduce the machine until next October! It seems strange to debut a machine so early.

Another name that will sound familiar to you is Quicksilva. This was its first CES, and got in on luck; another firm cancelled out. I met Mark Eyles and Carl Ziegler who said they were getting a very warm reception with lots of dealer enquiries.

Of course there were a few bugs, and I did my best to meet one from Learning Software. I cannot tell you much about their products as they do not plan to market in the U.K. However, their bug was very nice.

There were lots of magazines present. Each with a mini-booth. I was especially interested in the software that Playboy brought to demonstrate. Unfortunately, they would not let me take her home for a review.

I would like to close by quoting the president of Atari Sales, Donald Kinsborough, in remarks he made to a conference at the show:

"We must search for meaningful applications of microprocessor technology in the home. We are in the entertainment business and we enhance people's lives by offering opportunities for learning and self improvement.

"In fact, aside from word processing, there are few truly useful applications for home computers. Let's face it: you can balance your cheque book with a calculator and you can store your recipes in a box in the kitchen.

"We've got to make consumers say: 'Gosh, I didn't know a computer could do that' and 'I want one.'

"What I am telling you is that it is not enough for manufacturers to merely offer more computer memory to consumers. Most consumers have more power than they know what to do with already. And it is not enough for retailers to continue to justify the sale of computers on price alone.

"In fact, that is a disservice to consumers because consumers should be made aware of what the computer can do for them. Who are we helping if the consumer buys a cheap computer and winds up using it as an electronic paperweight or doorstop?

"Maybe we can learn something from Detroit. In the old days, car buyers were also preoccupied with horsepower and cubic inches of the engine. But nowadays, most people are interested in features and gas mileage. We've yet to get that point in our industry."

All those points are well taken. You may or may not agree, depending upon where you are coming from. One thing is for sure, almost half of the all consumers who purchase a computer costing less than $300 will not be using it less than six months later.

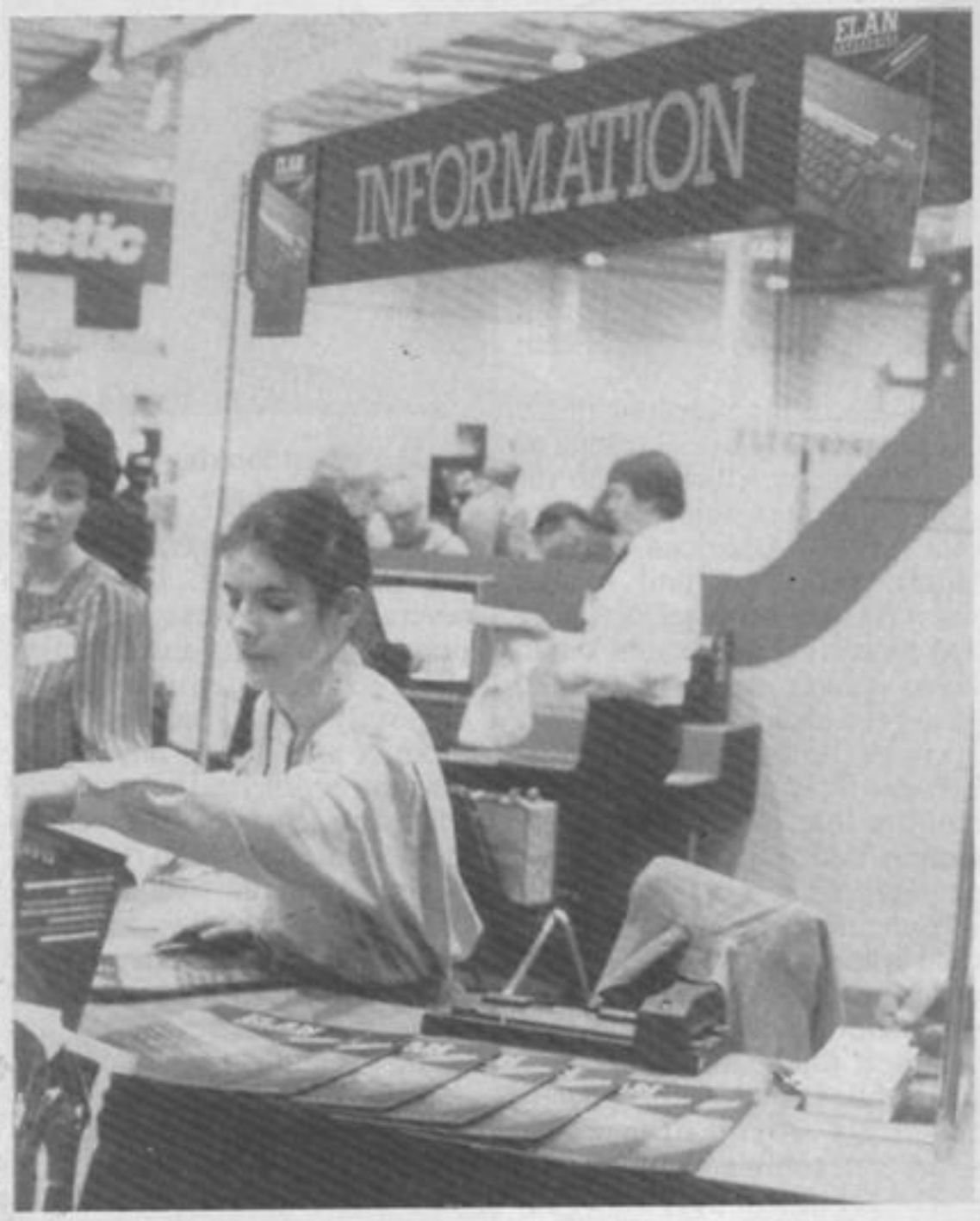
And I for one think that is a real shame. For all of us.

The show was great. Perhaps next year we'll see software wars instead of hardware wars. I hope so.

See you next year at the show, and in my U.S. Scene column.

● A bug from Learning Center

● Sol Davidson, U.S. General Manager of Commodore, a nice man



● A friendly face — Maggie Burton from Elan

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ATIC ATAC – The super spooky 3D horror **G.A.S. (Graphic Arcade Simulation)** Adventure Game.
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Design – The **ULTIMATE PLAY THE GAME** design team.

JET PAC – 16/48K ZX Spectrum or 8K Expanded VIC 20

ATIC ATAC – 48K ZX Spectrum

Dealer enquiries welcome. Phone (0530) 411485

These games should be available from **W.H. SMITHS, BOOTS, JOHN MENZIES, LASKYS, SPECTRUM CENTRES,** other **large department stores** and all good **major software retailers.** Alternatively, send the coupon to **ULTIMATE PLAY THE GAME** for immediate dispatch by return, subject to availability.

£5.50 each including VAT, first class postage and packing within UK.

Post this coupon to:
ULTIMATE PLAY THE GAME, The Green, Ashby de la Zouch, Leicestershire, LE6 5JU
Please rush me the following:
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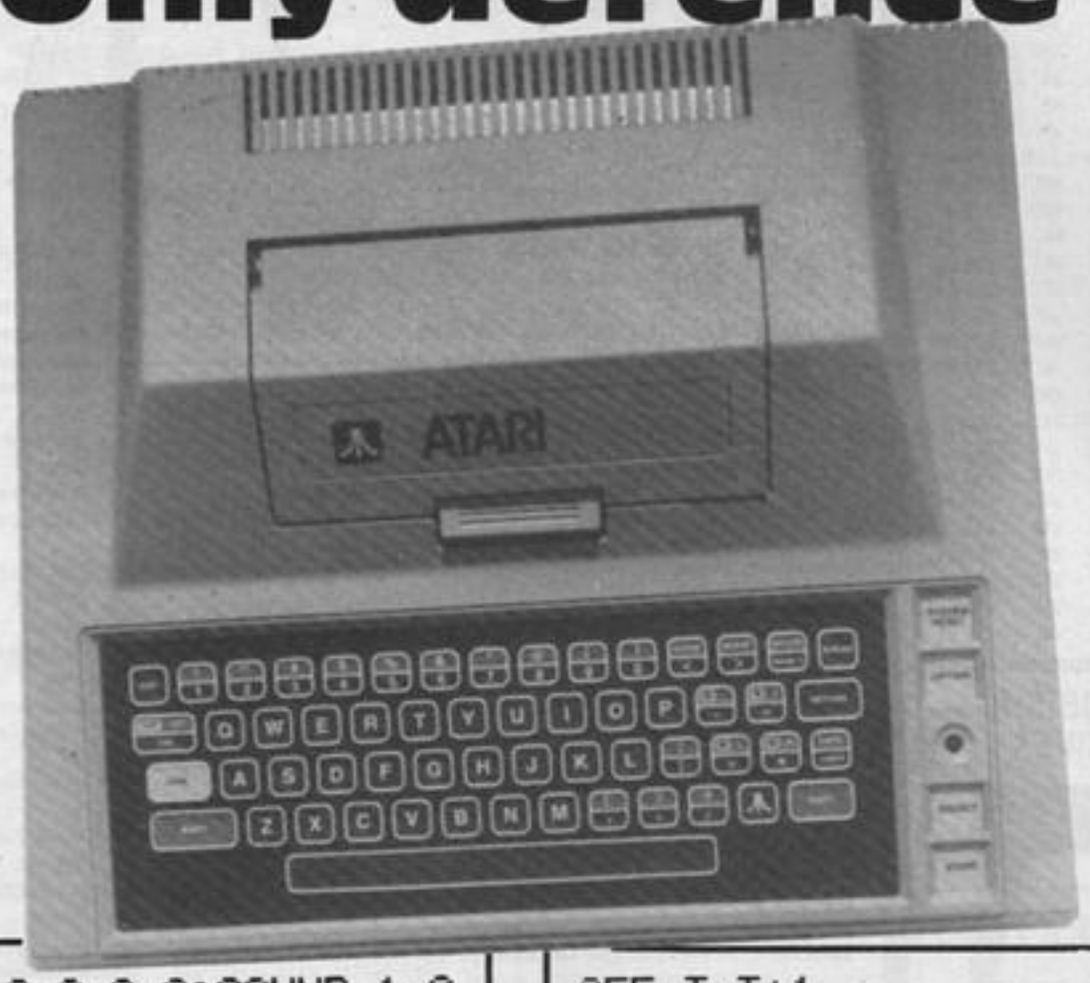
ULTIMATE PLAY THE GAME is a Trade name of Ashby Computers & Graphics Ltd.
The Green, Ashby de la Zouch. Leics. LE6 5JU

Dodge fast — it's your only defence

Space Dodger, John Redhead's short game for any Atari, will test your reactions with the joystick. With no weapons, all you can do is hope you can out-run the invaders



The object of Space Dodger is simple — just avoid the hordes of alien spaceships.

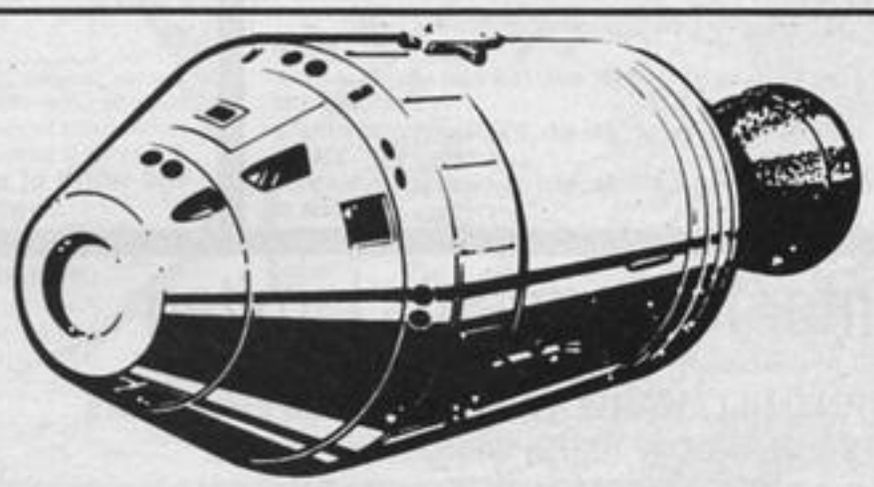
You are the commander of an unarmed passenger ship, controlled by a joystick, so there's no chance of blasting them.

You choose your level of difficulty, from 0 to 60.

How it works

1-9 initialise timer, set screen colour etc, display instructions and score
10-34 difficulty level, display loop, sound
100-240 define spaceship, sound
250-300 main loop checks for spaceship movement, print alien craft, check for crash (280)
1000-1010 explosion routine
2000-3110 title, opening tune, DATA

```
1 T=0:GOSUB 2000:SOUND 0,0,0,0:SOUND 1,0
,0,0:SOUND 2,0,0,0
2 POKE 53248,250:RESTORE :POKE 712,0:? "
}"
3 POKE 710,0:POKE 53278,0
4 POKE 707,15:POKE 752,1
5 IF Z=1 THEN ? "YOU LASTED ";T;" SPACE
SECONDS":T=0:FOR A=1 TO 800:NEXT A:GOTO
10
6 ? "YOU ARE CRUISING HOME IN YOUR SPACE
-  SHIP WHEN YOU ENCOUNTER A SWARM OF
 ALIEN SHIPS .BEING AN UNARMED"
7 ? "PASSENGER SHIP YOURSELF THE ONLY
   COURSE OF ACTION OPEN TO YOU IS TO US
EYOUR JOYSTICK TO KEEP OUT OF"
8 ? "THEIR WAY.GOOD LUCK":Z=1
9 FOR A=1 TO 50:SOUND 0,121,10,5:FOR B=1
 TO 90:NEXT B:SOUND 0,0,0,0:NEXT A
10 SOUND 0,255,10,2
11 ? "INPUT DIFFICULTY LEVEL
      (0 EASY TO 60 HARD)"
20 INPUT D:IF D<0 OR D>60 THEN ? ")":GOT
O 11
30 D=D+20:? "GET READY .....HERE WE GO"
40 FOR A=1 TO 1000:NEXT A
45 ? "}"
100 I=PEEK(106)-8
110 POKE 54279,I
120 PMBAS=I*256
130 FOR Q=PMBAS+512 TO PMBAS+640
140 POKE Q,0
150 NEXT Q
160 X=100:Y=D
170 POKE 704,90:POKE 559,46:POKE 53277,3
:POKE 53248,X
180 POKE 53248,X
190 FOR Q=0 TO 6
200 READ P
210 POKE PMBAS+512+Y+Q,P
220 NEXT Q
230 DATA 195,231,102,60,24,24,24
240 SOUND 0,0,0,8
250 X=X+6*(STICK(0)=7 AND X<200)-6*(STIC
K(0)=11 AND X>50)
255 T=T+1
260 POKE 53248,X
265 POKE 752,1
266 A=INT(RND(0)*40)
270 POSITION A,23:? "^"
280 IF PEEK(53252)=4 THEN GOTO 1000
300 GOTO 250
1000 SOUND 0,80,0,15:SOUND 1,10,0,15:FOR
 A=0 TO 255:POKE 710,A:POKE 712,A:NEXT A
1010 SOUND 0,0,0,0:SOUND 1,0,0,0:GOTO 2
2000 GRAPHICS 18:COLOR 1:SETCOLOR 0,8,8:
POSITION 4,5:? #6;"space dodger":POSITIO
N 4,7:? #6;"BY.J REDHEAD"
3000 L=30:RESTORE 3000
3002 B=0
3010 READ CH,N,D
3012 IF CH=500 THEN RESTORE 3000:B=B+1:G
OTO 3010
3020 SOUND CH,N,10,10
3030 FOR A=1 TO D*L:NEXT A
3035 IF B=2 THEN RETURN
3040 GOTO 3010
3050 DATA 0,81,0,1,162,0,2,128,4,0,53,4
3060 DATA 1,173,0,2,121,4,0,60,2,0,64,1,
0,72,1
3070 DATA 0,40,0,1,162,0,2,128,4,0,53,4
3080 DATA 1,173,0,2,121,4,0,60,2,0,64,1,
0,72,1
3090 DATA 0,40,0,1,162,0,2,128,4,0,53,4
3100 DATA 1,173,0,2,121,4,0,60,2,0,64,1,
0,60,1
3110 DATA 0,72,0,1,182,0,2,144,8,1,173,0
,2,121,8,500,500,500
```



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This is the best microcomputer currently on the market. 32K RAM, 32K ROM, 8 modes of operation, full colour, full-size keyboard, internal expansions such as disc interface, speech synthesizer, Econet interface – In short, it is a personal computer capable of expanding into a small business system

BBC Microcomputer Model B	£348 + VAT =	**£399.00**
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BBC Mod B + Econet interface	£389 + VAT =	**£447.35**
BBC Mod B + disk and Econet interfaces	£450 + VAT =	**£517.50**
BBC 100K disk drive	£230 + VAT =	**£264.00**
BBC dual 800K disk drive	£699 + VAT =	**£803.85**
Torch Z80 disk pack including Z80 2nd processor, 64K RAM and CPN operating system + Free Perfect Software	£699 + VAT =	**£803.85**
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Disk interface kit (free fitting)	£86 + VAT =	**£96.60**
Mod A to Mod B upgrade kit	£50 + VAT =	**£57.50**
Fitting charge for A to B upgrade kit	£20 + VAT =	**£23.00**
16K memory upgrade kit	£20 + VAT =	**£23.00**
Games paddles	£11 + VAT =	**£12.65**
12" Monochrome monitor incl. cable	£89 + VAT =	**£102.35**
16" Colour monitor incl. cable	£209 + VAT =	**£240.35**
User guide	£10 + VAT =	**£10.00**
Econet interface (free fitting)	£60 + VAT =	**£69.00**
Speech interface (free fitting)	£47 + VAT =	**£54.05**
BBC disk manual + formating disk	£30 + VAT =	**£34.50**
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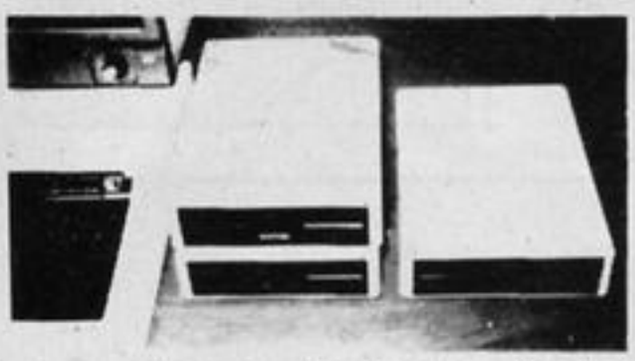
BBC word processor (view)	£52 + VAT =	**£59.80**
BBC Fourth language cassette	£15 + VAT =	**£17.25**
BBC Lisp language cassette	£15 + VAT =	**£17.25**

100% BBC COMPATIBLE MITSUBISHI AND TEAC SLIMLINE DISK DRIVES



These drives are supplied ready cased with all the necessary cables, formating program and user disk system guide.

There are some useful utilities included, e.g. Epson Screen Dump Program, Memory Dump, Free, Duplicate, Merge and Relocate. Power consumption of these drives is very low (0.2A typ. at +12V, 0.4V typ. at +5V per drive). Power is taken from the BBC computer.

Single drive 100K 40 tracks	£169 + VAT =	**£194.35**
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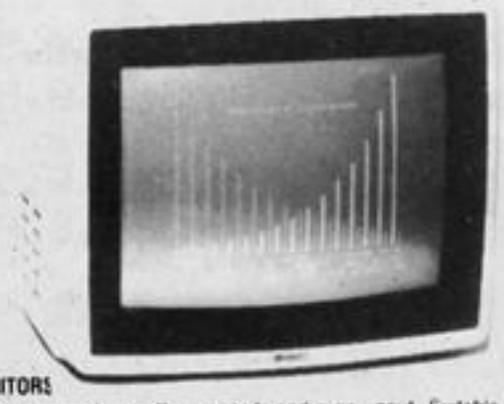
This package consists of BBC Microcomputer, View, wordprocessor, 400K Slimline disc drive, High resolution 12" Green monitor, Juki 6100 18CPS Daisy Wheel printer and all the necessary cables and documentation. The above package can be supplied with components of your own choice, e.g. 800K disc drive or a different printer. Please phone us for a price for your particular requirement.

Special package deal £1,099 + VAT = **£1,263.85**

PROFESSIONAL MONITORS



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12" Green screen monitors with composite and sync. input. Suitable for most computers.

✻ 18 MHz band width, high resolution	£89 + VAT =	**£102.35**
✻ 15 MHz band width, normal resolution	£69 + VAT =	**£79.35**

COLOUR MONITORS

✻ MICROVITEC RGB input 14" monitor supplied with RGB lead for BBC	£209 + VAT =	**£240.35**
✻ SANYO SCM 14" Normal res. 14", 400 dots, RGB input supplied with RGB lead	£199 + VAT =	**£228.85**
✻ SANYO SCM 14M Medium res. 14", 600 dots, RGB input supplied with RGB lead	£299 + VAT =	**£343.85**
✻ SANYO SCM 14H High res. 14", 800 dots, RGB input supplied with RGB lead	£399 + VAT =	**£458.85**

EPSON FOR RELIABILITY

EPSON FX80: 80 column, 160 CPS, normal, italic and elite characters, 256 user definable characters, superscript, subscript, 11 x 9 matrix, bi-directional logic seeking, hi-res bit image printing (960 x 8 dots line), friction and pinfeed, 9 international character sets, Centronic parallel interface.

FX80 PRICE £349 + VAT = **£401.35**

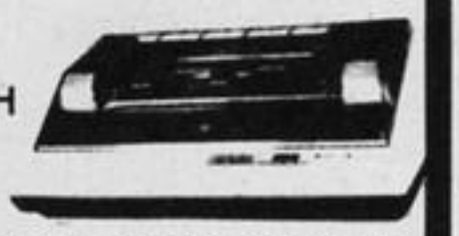
EPSON RX80: 80 column, 100 CPS, normal, italic and elite characters, 11 international character sets, hi-res bit image printing, bi-directional logic seeking, 4" to 10" adjustable pin feed, Centronic parallel interface.

RX80 PRICE £239 + VAT = **£274.84**

MX-100 136 column, 100 CPS, friction and tractor feed, up to 15" adjustable carriage, hi-res bit image printing, true descenders, Centronic parallel interface.

MX-100 PRICE	£399 + VAT =	**£458.85**
RS232 Interface for all above printers	£55 + VAT =	**£63.25**
EPSON RX80FT (friction & tractor)	£269 + VAT =	**£309.35**
FX100	£479 + VAT =	**£550.85**
Roll holder for FX80	£12 + VAT =	**£13.80**
Ribbon for MX80, FX80, RX80	£8 + VAT =	**£9.70**
Ribbon for MX100	£12 + VAT =	**£13.80**

SEIKOSHA DOT MATRIX PRINTERS WITH HIGH-RES GRAPHICS



GP-100A 80 column, 50 CPS, dot addressable hi-res graphics, 10" wide, fully adjustable, tractor feed, 7 x 5 print matrix, Centronic parallel interface.

GP-100A 50CPS PRICE £175 + VAT = **£201.25**

GP-250X 80 column, 50 CPS, 10" wide, fully adjustable, tractor feed, true descenders, 64 user definable characters, double height and or double width printing, 8 x 5 print matrix, Centronic parallel and RS232 (serial) interfaces both included.

GP-250X PRICE £219 + VAT = **£251.85**

NEW GP-700A 7 COLOUR PRINTER

This latest addition to Seikosha range gives you print in seven colours, 10" wide carriage, friction and tractor feed, 50 CPS print speed, dot addressabe high-res graphics, 4 hammer printing mechanism, 10 CPI or 13.3 CPI, special Quite printing mode, Centronic parallel interface.

GP-700A SPECIAL INTRODUCTORY PRICE £349 + VAT = **£401.35**

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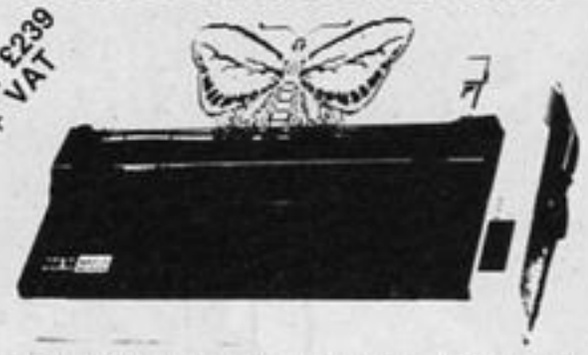


The most cost effective quality matrix printers to be launched this year. DP510 and DP515 features include friction and tractor feed and roll holders as standard. 100 CPS print speed bi-directional logic seeking 9 x 9 matrix gives true descenders. 2.3K buffer as standard hi-res bit image plus block graphics, sub and super script, italic printing, auto underlining, vertical and horizontal tabulation, left and right margins set, skip over perforation, back space and self test.

STAR GEMINI 10 10" carriage, 80 columns, 120 cps. **SPECIAL PRICE**	£239 + VAT =	**£274.85**
STAR DP515 15" carriage 136 columns. SPECIAL PRICE	£279 + VAT =	**£320.85**
RS232 INTERFACE FOR ABOVE	£50 + VAT =	**£57.50**

SHARP MZ 700 SERIES COLOUR COMPUTER

The new Sharp MZ 700 has the flexibility to run programs in BASIC, FORTRAN, MACHINE CODE, PASCAL, ASSEMBLER and many other languages. The 64K memory caters for advanced programming, and the MZ 700 gives you access to a wide choice of software.

£60 worth of software FREE — ten games

SPECIAL PRICE £199 + VAT = £228.85

TEXAS INSTRUMENTS TI 99/4A

This microcomputer is based on TMS9900 16-bit microprocessor. It includes 16K RAM, 16 colour high resolution graphic (192 x 256). The screen display is 32 characters, 24 lines TI-BASIC. Full-size keyboard. For Software there are about 1000 programs to choose from. There are a lot of peripherals available, e.g. Disk Drives, Disk Interface, Speech Synthesizer, Extra RAM. Additional Language (PASCAL, TI-LOGO, ASSEMBLER)

TI HOME COMPUTER HARDWARE

Title	Description	Price inc VAT
T199 4A	Complete with UHF modulator and power supply + free cassette lead	£89.95
PERIPHERALS		
Speech Synthesizer	When used with selected modules will roduce electronic speech	£41.95
Peripheral Expansion System	This unit takes all card peripherals and on internal disk drive	£79.95
Disk Drive – Internal	92K formatted drive, mounts internally in peripheral expansion system	£149.95
Disk Controller Card	Controls up to 3 disk drives, complete with disk manager command module	£109.95
Disk Drive Double Sided	92K formatted capacity per side acts as 2 drives DSK1 & DSK2 total capacity 184K bytes	£219.95
Disk Drive External	Complete with own case, power supply & connecting cables	£259.95
RS232 Expansion Card	Provides 2 serial RS232 ports, and one parallel port for interfacing	£79.95
RAM Expansion Card	Adds 32K bytes extra RAM bringing total capacity to 48K bytes	£79.95
P-Code Card	Includes the UCSD-PASCAL P-code interpreter	£129.95
Matrix Printer	80 column matrix printer printer GP-100A + cable	£219.95
Matrix Printer GP250X	80 column matrix printer with RS232 and Centronic parallel interface	£273.95
Epson RX80 Printer	80 column, 100 CPS matrix printer	£320.85

Please send S.A.E. for software prices

THE AFFORDABLE DAISYWHEEL PRINTER

ONLY £369 + VAT

- ★ 18 CPS – Bi-Directional Logic Seeking
- ★ 10, 12, 15 CPI + Proportional Spacing
- ★ "Drop in" Daisywheel – Triumph Adler Compatible
- ★ Supports all Wordstar features
- ★ Diablo protocols – IBM Selectric ribbon
- ★ 2K Buffer as standard – 100 character Daisywheel

SPECIAL OFFER JUKI 6100 DAISYWHEEL £369 + VAT = £424.35

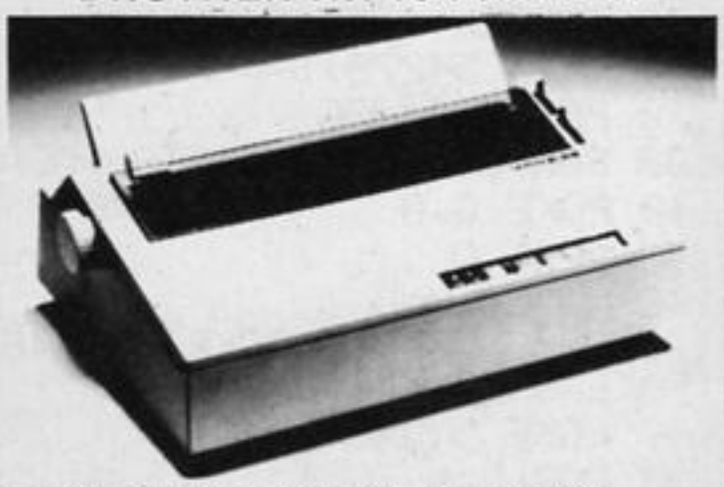
THE CP80 QUALITY PRINTER

ONLY £239 + VAT

- ★ 80 CPS – Bi-Directional Logic Seeking 80 Column
- ★ Friction and Adjustble Tractor Feed
- ★ Patented Square Needles up to 9 x 13 matrix
- ★ Hi-Res Graphics and Block Grphics

SHINWA CP80 PRINTER	£239 + VAT =	**£274.85**
SPARE RIBBON FOR CP80	£5 + VAT =	**£5.75**

BROTHER HR-15 PRINTER



The Brother HR-15 high specification daisywheel printer. RRP is £500

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3 FREE daisywheels supplied!

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We welcome callers, no parking problems.

Access

VISA

70 chances to win great games from LIMITED ABRASCO

Enter our Spot the Difference competition and you stand a chance of winning a share of £1,000-worth of Abrasco software. The prizes are for the VIC-20, Commodore 64 and Spectrum

Dozens of great games from Abrasco are on offer in this week's spot the difference competition.

Seventy prize packages are waiting to be won by owners of these computers: VIC-20, Spectrum and Commodore 64.

That's a total of £1,000-worth of prizes and each winner will get two tapes.

And all you have to do is find the differences between our two cartoons.

The prizes

Each of our 70 winners will receive two tapes, worth about £14-£15, chosen by Abrasco from its range.

VIC-20 owners will get two of the following:

Vixplode	**Fly Snatcher**
Android Attack	**Alien Hunter**
Double Trouble	**Double Trouble**
Meter Mania	**Catcha Troopa**

Winning Spectrum owners will receive these two games:

Golf	**Pool**

And our winners who own Commodore 64s will be sent two tapes from these three:

Vixplode 64	**Golf 64**
Supa Catcha Troopa	

The winners' names and the solution will be published in Home Computing Weekly.

How to enter

Study the two cartoons — there are a number of differences between them.

Circle the differences on cartoon B and then fill in your name, address and the name of one of the three computers for which we are offering prizes: VIC-20, Commodore 64 or Spectrum.

Seal the coupon and cartoon B in an envelope and write clearly on the back of the envelope the number of differences you found.

Post your entry to Abrasco competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB.

Entries close at first post on February 10.

You may enter as many times as you wish but each entry must be on the official coupon — not a copy — and sealed in a separate envelope.

The winners will be the first 70 correct entries opened, regardless of prizes chosen.

The prizes will arrive from Abrasco within 28 days of the publication of the issue containing the names of the winners.

Important: please follow carefully the guidelines on entering — incomplete coupons and entries in envelopes with no number on the back will not be considered.

The rules

The first 70 correct entries opened after the closing date, February 10, 1984, will win the prizes. Coupons which are not fully completed and envelopes without the number of differences found on the reverse will be discarded.

Entries will not be accepted from employees of Argus Specialist Publications, Abrasco and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies.

Abrasco competition

Entry Coupon

Name_____

Address_____

_____

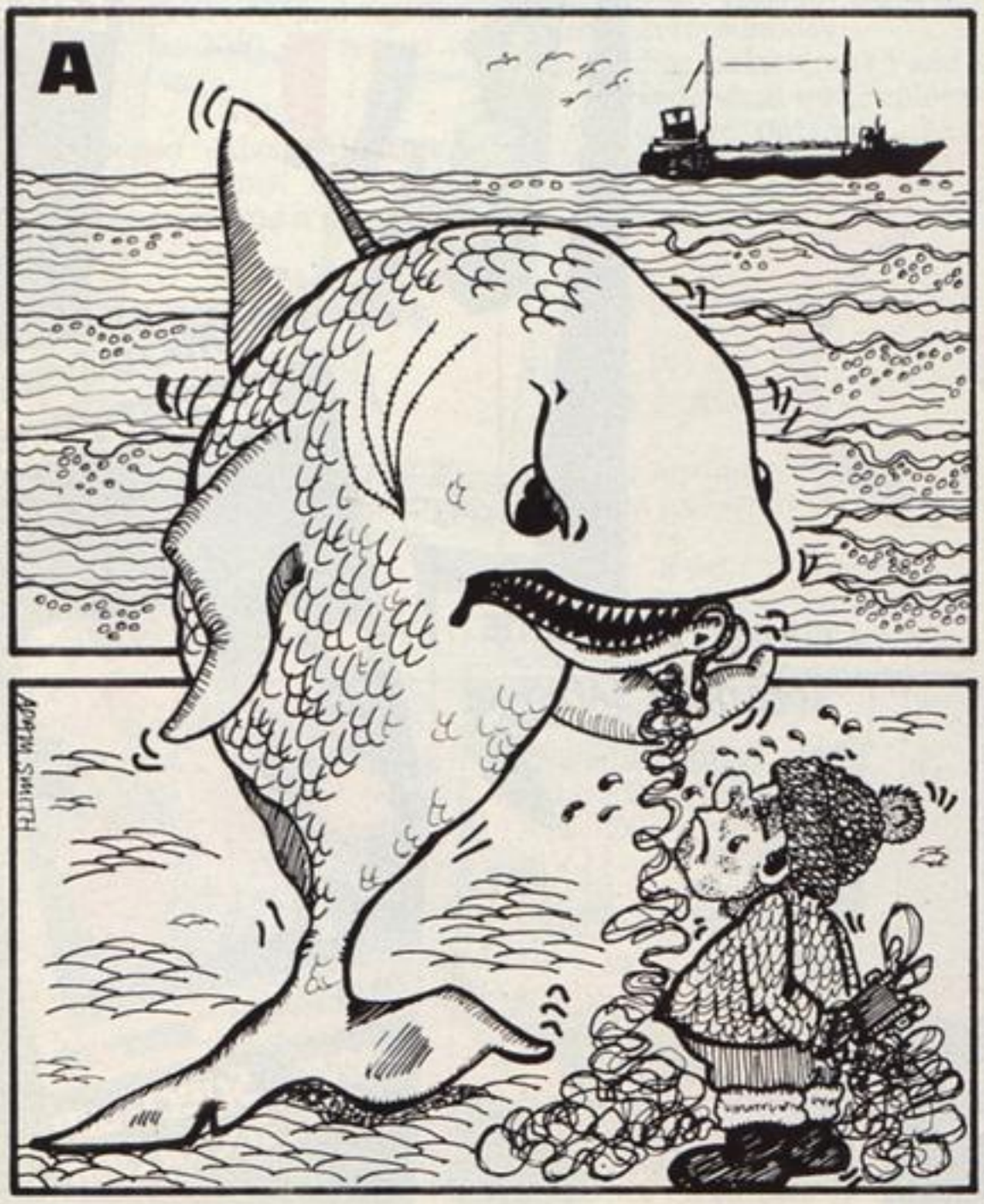
_____

_____ **post code**_____

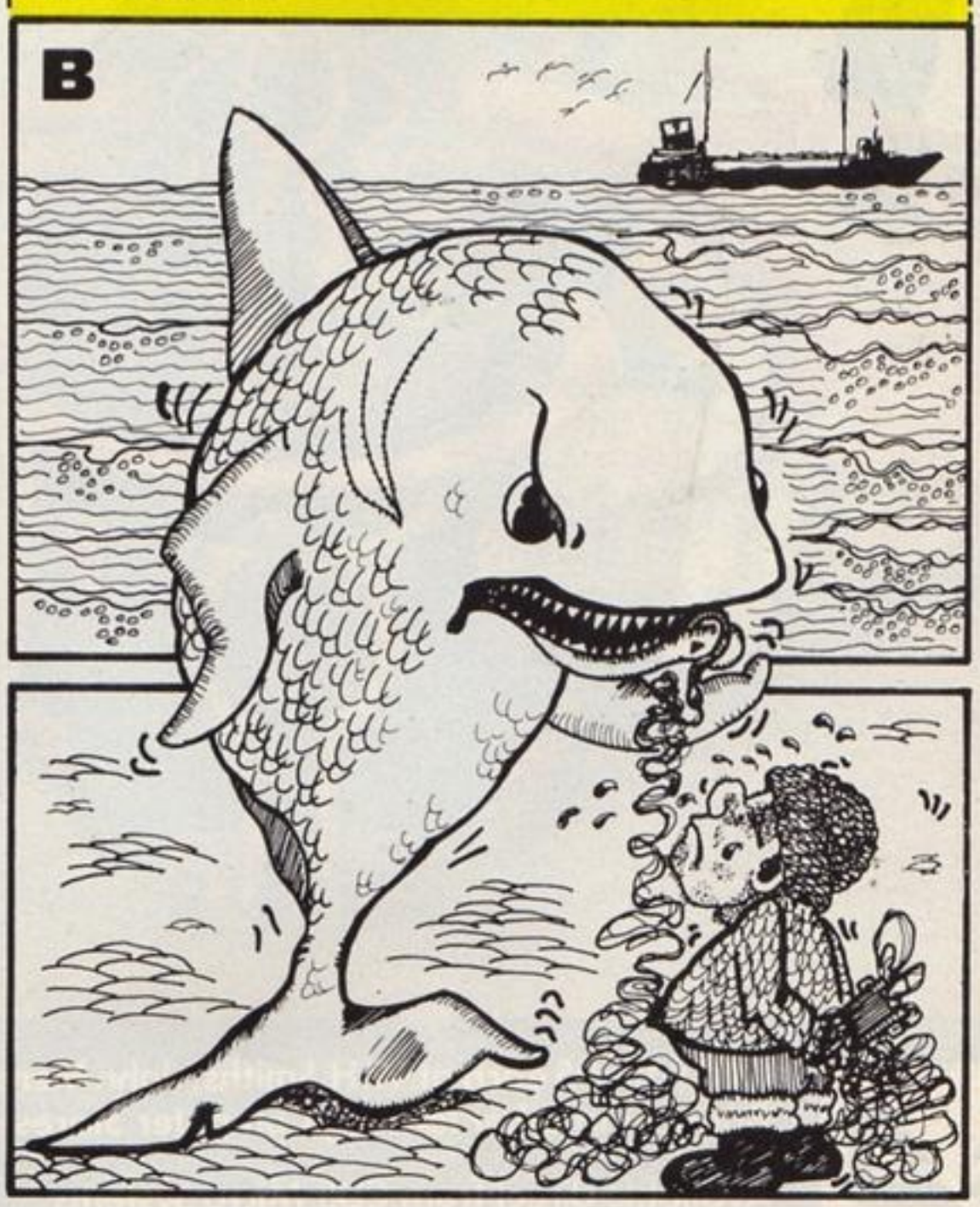
Number of differences found:_____

Complete clearly and fully — if you are a prizewinner, this will act as a label. Post to Abrasco competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB. Closing date: first post, February 10, 1984. Do not forget to write the number of differences found on the back of the envelope

A



B



CDS programs, the ultimate experience

This is 'Winged Warlords' a brand new Arcade Adventure game from CDS. Just one of a new range of exciting programs for 1984....

new .... Spectrum Education

new .... Spectrum Arcade action

new .... Spectrum Adventure

ONLY £5·95 each at W.H.Smiths, John Menzies *Boots, and other leading Computer Stores, or...

Available direct from CDS Micro Systems
Send Cheque or P.O. To CDS Dept. YC1,
10, Westfield Close, Tickhill, Doncaster
DN11 9LA. Tel: (0302) 744129.

* Selected titles only

Extend your 64 to do a lot more

Make text, sprites and sound more flexible with part two of David Rees' Extended BASIC for the Commodore 64. You can use this week's listing even if you missed part one

Just type in this listing for many more commands on your Commodore 64 — all easy to access from BASIC.

To run each command, SYS is still used, but variables are read directly after the command (they must be integer values).

Also, to make the commands easier to recognise, each is given a variable name similar to its own name — be careful not to reset these variables in a program.

Unfortunately, some names have had to be shortened because of their similarity to other commands. As POINT contains INT it is shortened to PO, for example.

As with part one, take care when entering the code and SAVE the program before you use any part of it.

The checksums also act as a rough guide, totalling the code numbers of each section and showing if some are wrong by an incorrect total.

You can then use the demonstration program, showing the versatility of some of the commands.

Although this week's part works on its own, you cannot use POINT, LINE, CLG or MODE clear if you missed last week's issue.

The "manual" which follows is brief, but it does give clear details of every command as well as some more detailed information.

Note: Modes 4 and 5 use the second 16K block of memory, so sprite graphics must be POKEd to 16K and above, and registers normally at 2040 are moved to 25592.

Next week: Advanced demonstration programs, including a Teletext screen and a map of the British Isles

The commands

MODE

Allows easy change to graphics modes. The screen will only be cleared if you want it to be.

Format: MODE = 51828
SYSMODE,A,B,C

B: 0 or 1 Which hi-res screen is cleared

C: if C = 1 then that screen is cleared

GCOL

Change graphics colour.

Format: GCOL = 51770
SYSGCOL,A,B

Value A
0,1,2,3 hi-res colour choice (eg on/off or multicolours)
4 text colour
5 border colour
6 background colour
7,8,9 Colours 1,2,3 for ECM and multicolour modes
10,11 Sprite multicolours 1 and 2
12 to 19 individual sprite colours
B: the colour put into these registers (0-15)

POINT

Draws a point in modes 0,1,4,5

Format: PO = 51334
SYSPO,A,X,Y

A is the attribute: each bit performs a separate job.

Bit number	if off	if on
0	Screen 0	Screen 1 drawn to
1	Plot on	Unplot
2	normal	ExclusiveOR

X,Y plot position (320 by 200 always)
Plot colour is specified by SYSGCOL,(0-3),colour

GMOVE

For use with line, moves plotting position.

Format: GMOVE = 52039
SYSGMOVE,X,Y

X,Y is the plot position

LINE

Draws a line from last plotting position in modes 0,4.

Format: LINE = 51754
SYSLINE,A,X,Y
For variable definition see POINT.

TPOINT

Draws a point in text modes 3,6,7 (mode 8 if graphics are defined)

Format: TPO = 51501
SYSTPO,A,X,Y
A (0 or 1) normal or Exclusive OR

X,Y plot position

Plots in text modes in an 80 × 50 resolution, but for compatability it uses a 320 × 200 number grid.

CLG

Format: CLG = 52151
SYSCLG,A

Clears graphics screen denoted by **A** (0 or 1)

GTEXT

Mode 0 and 4

Prints one specified character given by a number (see Commodore Manual, p132 for characters). It may be upper or lower case, graphic or reverse field and single or double height. Both background and foreground colours may be independently defined. It may be combined with hi-res graphics, giving more than full Teletext effects.

Format: GTEXT = 52657
SYSGTEXT,X,Y,A,B,C

X,Y print position on a 40 × 25 grid

A colour, given by background colour + 16*text colour

B bit 0 gives the screen printed to. bit 1 determines single or double height text.

C Character:0-255 gives graphics character set, 256-511 gives text character set.

CURSOR

Format: CRSR = 53056
SYSCRSR,X,Y
Similar to TAB(X,Y). Sets printing position of the cursor relative to the top left hand corner of the screen.

SPRITE

Format: SPRITE = 52164
SYSSPRITE,N,X,Y

Changes the position of sprite number N (0-7) to the position X,Y(511,255 max).

SETSPRITE

Format: SETSPRITE = 52248
SYSSETSPRITE,N,A,M,B,C,D,X,Y,P,G

Defines video registers for sprites in the following way:

N sprite number (0-7)
A sprite off/on (0-1)
M normal or multicolour (0-1)
B,C,D defines multicolours 0,1 and 2 for all sprites (range 0-15)
X expand X off/on (0-1)
Y expand Y off/on (0-1)
P foreground/sprite priority (0-1)
G start of sprite graphics (0-255)

MUSIC

Plays a constant musical note of independent volume. To cut the note, use zero volume or POKE the waveform register to zero.

Format: MUSIC = 52453
SYSMUSIC,S,W,V,N,O,D

S sound channel (0-2)
W waveform 16,32,64 or 128 ▶

Value A	Classification	Resolution	Text
0	hi-res screen 0	320 × 200	Teletext
1	hi-res screen 0	160 × 200	N/A
2	extended colour	40 × 25	40 × 25
3	multicolour	80 × 50	N/A
4	hi-res screen 1	320 × 200	Teletext
5	hi-res screen 1	160 × 200	N/A
6	normal graphics	80 × 50	40 × 25
7	normal text	80 × 50	40 × 25
8	user-defined graphics	40 × 25 +	defined

V volume independent of other channels (0-15)
N note number (0-11) gives C to B (manual p153)
O octave number (0-7)
D dummy value used for later expansion

VOL

Sets master volume V (range 0-15).

Format: VOL = 52646
SYSVOL,V

FX

Performs a few odd useful functions.

Format: FX = 53075
SYSFX,N,A

N =
0 changes display column number 38/40 (0/1)
1 changes display row number 24/25 (0/1)
2 fine scrolls screen X wards (A = 0 – 7)
3 fine scrolls the screen Y wards (A = 0 – 7)
4 A = 0:blank screen; A = 1:display
5 sets master volume and filter modes (0-255)
6 sets IRQ speed (i.e. cursor and TI rate). (0-255). Normally 67
7 sets repeat keys. A = 0:cursor only;64:no keys ; 128: all keys

Reference section

Plotting rate in pixels per second (command only):
POINT – 300; LINE – 3500;
TPOINT – 1000

New Memory Map

0 systems variables

1024 screen and colour for hi-res screen 0

2048 BASIC RAM

8192 hi-res screen 0, continues to **16193**

14336 user-defined characters

16384 hi-res screen 1

24576 hi-res screen 1 colour, to **25575**

40960 BASIC ROM

49152 Extended BASIC code to **53247**

Command Input

SYS to machine code. Location indicated by appropriately named variable (nb. access time is saved by use of only the first 2 letters of this variable). Further values read by separate routine. This will read both variables and numbers, but will not evaluate expressions. Only integer values can be used.

Error Calls

"Illegal Quantity" if a value is out of range.
"Syntax Error" if too many or too few values come after the command, if a comma does not follow the command, or if an expression is used.

Listing 1 — Extended BASIC part two. Use the CHECKSUM to make sure you have typed it in accurately

```
1 REM*****************
2 REM*EXTENDED BASIC*
3 REM*   PART 2     *
4 REM*BY DAVID REES *
5 REM*****************
6 REM* TEXT,SPRITES *
7 REM*  AND SOUND   *
8 REM*****************
9 X=51184:C=0
10 FORN=0TO1788:READA:POKEX+N,A:C=C+A:NEXT
15 PRINT"CHECKSUM TOTAL 1="C
16 PRINT"IT SHOULD BE 205377"
20 X=207*256:C=0
30 FORN=0TO226
40 READA:POKE(X+N),A:C=C+A
50 NEXT
55 PRINT"CHECKSUM TOTAL 2="C
56 PRINT"IT SHOULD BE 256774"
100 DATA173,,221,41,252,24,105,3,24
110 DATA141,,221,32,129,255,162,14,108,,3
120 DATA108,10,3,96,32,4,200,165,102
125 DATA41,128,201,,240,3,76,240,199
130 DATA165,97,56,233,138,144,5,169,1
135 DATA133,253,96,169,,133,253
140 DATA133,252,133,251,165,97,201,
145 DATA208,3,133,251,96,41,127,201,1
150 DATA240,247,201,9,240,37
155 DATA168,169,128,136
160 DATA74,24,136,208,251,133,254
165 DATA169,1,133,20,165,98,37,254
170 DATA201,,240,6,165,251,5,20,133,251
175 DATA6,20,24,6,254,144,235,96
176 DATA169,1,133,252,165,98,10,24
177 DATA166,99,224,,240,3,24,105,1,24
178 DATA133,251,96
180 DATA32,8,200,165,253,240,3
185 DATA76,240,199,165,252,208,249,96
190 DATA32,8,200,165,253,240,3
195 DATA76,240,199,165,251,41,1
197 DATA141,101,3,165,251,41,2,240,2
200 DATA169,1,141,102,3,165,251,41,4
205 DATA240,2,169,1,141,103,3,173,22,207
210 DATA240,18,173,16,207,141,60,3
215 DATA173,17,207,141,61,3,173,18,207
220 DATA141,62,3,173,20,207,141,89,3
225 DATA173,21,207,141,90,3,32,8,200
230 DATA165,253,240,1,96,165,251
235 DATA141,64,3,141,93,3,141,17,207
240 DATA165,252,141,63,3,141,92,3
245 DATA141,16,207,32,8,200,165,253
250 DATA208,226
255 DATA165,252,208,222,165,251
260 DATA141,65,3,141,94,3,141,18,207
265 DATA173,19,207,240,13,201,1,240,9
270 DATA201,4,240,5,201,5,240,1,96
275 DATA173,22,207,240,15,160,
280 DATA140,22,207,201,2,240,3,76,107,203
285 DATA76,,,76,105,194
290 DATA32,119,200,165,251,41,1
295 DATA141,55,3,173,20,207,141,54,3
300 DATA32,8,200,165,253,240,1,96
305 DATA165,251,24,102,252,106,24
310 DATA102,252,106,24,141,52,3,56
315 DATA233,80,144,2,24,96,32,8,200
320 DATA165,253,240,1,96,165,252,240,1
325 DATA96,165,251,74,24,74,24,141,53,3
330 DATA56,233,50,144,2,24,96
335 DATA173,19,207,201,3,240,13,201,6
340 DATA240,9,201,7,240,5,201,8,240,1
345 DATA24,173,52,3,24,74,24,141,56,3,10
350 DATA24,141,57,3,173,52,3,56
355 DATA237,57,3,24,141,60,3,173,53,3
360 DATA24,74,24,141,58,3,10,24
365 DATA141,59,3,173,53,3,56,237,59,3
370 DATA24,10,24,141,61,3,24,109,60,3
375 DATA24,168,169,1,192,,240,8,24,10
380 DATA24,136,192,,208,248,141,62,3
385 DATA169,4,133,252
390 DATA173,56,3,172,58,3,192,,240,13
395 DATA24,105,40,144,3,24,230,252,136
400 DATA192,,208,243,133,251,160,
405 DATA177,251,217,,207,240,7,200
410 DATA192,16,208,246,160,,152
415 DATA172,55,3,192,,208,6,13,62,3
420 DATA24,144,3,77,62,3,168,185,,207
425 DATA160,,145,251,165,252,24
430 DATA105,212,24,133,252,173,54,3
435 DATA145,251,96
440 DATA169,1,141,22,207,76,134,200
445 DATA169,2,173,22,207,76,134,200
450 DATA32,119,200,165,251,133,2
```

```
455 DATA32,119,200,166,251,165,2,56
460 DATA233,4,176,9,142,20,207,165,2
465 DATA141,21,207,96,24,201,,208,4
470 DATA142,134,2,96,56,233,1,24
475 DATA133,2,56,233,15,144,2,24,96
480 DATA164,2,165,251,153,32,208,96
485 DATA32,119,200,173,,221,41,252,9,3
490 DATA141,,221,173,17,208,41,159
495 DATA141,17,208,173,22,208,41,239
500 DATA141,22,208,169,21,141,24,208
505 DATA165,251,56,233,9,144,4,24
510 DATA76,240,199,165,251,133,2
515 DATA32,8,200,165,251,41,1,141,101,3
520 DATA32,8,200,165,251,41,1,201,
525 DATA240,3,32,215,194,165,2
530 DATA141,19,207,201,,208,14,169,31
535 DATA141,24,208,173,17,208,9,32
540 DATA141,17,208,96,201,1,208,11
545 DATA173,22,208,9,16,141,22,208,24
550 DATA144,227,201,2,208,14,169,21
555 DATA141,24,208,173,17,208,9,64
560 DATA141,17,208,96,201,3,208,14
565 DATA169,21,141,24,208,173,22,208
570 DATA9,16,141,22,208,96,201,4
575 DATA208,24,169,128,141,24,208
580 DATA173,,221,41,252,9,2,141,,221
585 DATA173,17,208,9,32,141,17,208,96
590 DATA201,5,208,11,173,22,208,9,16
595 DATA141,22,208,24,144,217,201,6
600 DATA208,1,96,201,7,208,6,169,23
605 DATA141,24,208,96,169,31,141,24,208
610 DATA96
615 DATA32,8,200,165,253,208,11,234
620 DATA165,252,141,16,207,165,251
625 DATA141,17,207,32,8,200,165,253
630 DATA240,1,96,165,252,208,251
635 DATA165,251,141,18,207,96
640 DATA173,62,3,205,65,3,208,17
645 DATA173,61,3,205,64,3,208,9
650 DATA173,60,3,205,63,3,208,1,96
655 DATA173,62,3,56,233,200,144,11,24
660 DATA173,65,3,56,233,200,144,2,24,96
662 DATA173,60,3,240,24,173,63,3,240,19
665 DATA173,61,3,56,233,64,144,11,24
667 DATA173,64,3,56,233,64,144,2,24,96
668 DATA76,112,197
670 DATA32,119,200,165,251,41,1
675 DATA141,101,3,76,215,194
680 DATA32,119,200,165,251,41,7,24,10
685 DATA24,133,2,169,1,133,255,164,251
690 DATA192,,240,6,6,255,24,136,208,250
695 DATA32,8,200,165,253,240,3
700 DATA76,240,199,165,251,164,2
705 DATA153,,208,165,252,240,8
710 DATA173,16,208,5,255,24,144,13
715 DATA169,255,56,229,255,24,133,255
720 DATA173,16,208,37,255,141,16,208
725 DATA32,119,200,165,251,164,2
730 DATA153,1,208,96
735 DATA32,119,200,165,251,41,7,133,2
740 DATA169,1,133,255,164,251,192,
745 DATA240,6,6,255,24,136,208,250
750 DATA169,255,56,229,255,24,133,75
755 DATA32,119,200,165,251,41,1,201,
760 DATA240,8,173,21,208,5,255,24
765 DATA144,5,173,21,208,37,75
770 DATA141,21,208,32,119,200,165,251
775 DATA41,1,201,,240,8,173,28,208
780 DATA5,255,24,144,5,173,28,208,37,75
785 DATA141,28,208,32,119,200,165,251
790 DATA164,2,153,39,208,32,119,200
795 DATA165,251,141,37,208,32,119,200
800 DATA165,251,141,38,208,32,119,200
805 DATA165,251,41,1,201,,240,8
810 DATA173,29,208,5,255,24,144,5
815 DATA173,29,208,37,75,141,29,208
820 DATA32,119,200,165,251,41,1,201,
825 DATA240,8,173,23,208,5,255,24
830 DATA144,5,173,23,208,37,75
835 DATA141,23,208,32,119,200,165,251
840 DATA41,1,201,,240,8,173,27,208
845 DATA5,255,24,144,5,173,27,208
850 DATA37,75,141,27,208,32,119,200
855 DATA165,251,164,2,153,248,7,96
955 DATA32,119,200,165,251,41,3,201,3
960 DATA208,1,96,168,192,,240,10,169,
965 DATA24,105,7,24,136,208,249,168
970 DATA132,2,32,119,200,165,251,9,1
975 DATA133,255,41,254,164,2,153,4,212
980 DATA169,15,153,5,212,32,119,200
985 DATA165,251,41,15,10,24,10,24,10,24
990 DATA10,24,164,2,153,6,212,32,8,200
995 DATA165,253,240,1,96,165,252
1000 DATA208,251,165,251,56,233,12
1005 DATA176,244,24,165,251,10,24,168
1010 DATA185,40,207,133,80,185,41,207
1015 DATA133,79,32,119,200,165,251
1020 DATA41,7,133,81,169,7,56,229,81
1025 DATA24,168,201,,240,12,165,80
1030 DATA24,106,102,79,24,136,208,248
1035 DATA133,80,32,8,200,165,253,240,3
1040 DATA76,240,199,165,252,133,82
1045 DATA165,251,24,42,38,82,24,42
1050 DATA38,82,24,164,2,153,23,207
1055 DATA165,82,153,24,207,169,1
1060 DATA153,25,207,165,79,153,,212
1065 DATA165,80,153,1,212,165,255
1070 DATA153,4,212,96
1075 DATA32,119,200,165,251,41,15
1080 DATA141,24,212,96
1100 DATA32,119,200,165,251,56,233,40
1110 DATA144,4,24,76,240,199,165,251,141,70,3
1120 DATA32,119,200,165,251,56,233,25
1130 DATA176,237,165,251,141,71,3,32,119,200
1140 DATA165,251,141,72,3,32,119,200,165,251
1150 DATA41,1,141,73,3,165,251,41,2
1160 DATA141,74,3,201,,240,10,173,71,3
1170 DATA201,24,208,3,76,240,199
1180 DATA32,8,200,165,251,24,42,38,252
1190 DATA24,42,38,252,24,42,38,252,24
1200 DATA133,251,165,252,24,105,208,24
1210 DATA133,252,169,4,133,81,173,70,3
1220 DATA172,71,3,192,,240,11,24
1230 DATA105,40,144,3,24,230,81,136
1240 DATA208,245,133,80,173,73,3,240,8
1250 DATA165,81,24,105,92,24,133,81
1260 DATA169,,133,254,173,70,3,24,42
1270 DATA38,254,24,42,38,254,24,42,38,254
1280 DATA24,172,71,3,192,,240,13,24
1290 DATA105,64,144,3,24,230,254
1300 DATA230,254,136,208,243,133,253
1310 DATA173,73,3,208,8,165,254,24
1320 DATA105,32,24,144,5,165,254,24
1330 DATA105,64,24,133,254,173,14,220
1340 DATA41,254,141,14,220,165,1,41,251
1350 DATA133,1,160,,173,74,3,208,29
1360 DATA173,72,3,145,80,177,251,145,253
1370 DATA200,192,8,208,247,165,1,9,4
```

```
1380 DATA133,1,173,14,220,9,1,141,14,220,96
1390 DATA173,72,3,145,80,160,40,145,80
1400 DATA169,,162,,133,82,133,83
1410 DATA164,82,177,251,164,83,145,253
1420 DATA200,145,253,230,82,230,83
1430 DATA230,83,192,7,208,235,165,253
1440 DATA24,105,64,144,3,24,230,254
1450 DATA230,254,133,253,232,169,,224,2
1460 DATA208,212,24,144,179
2000 DATA32,126,124,226,123,97,255,236
2010 DATA108,127,225,251,98,252,254,160
2020 DATA,,,6,,,,,,,49,234, ,,,,,,,,,,,
2030 DATA134,30,142,24,150,139,159,126
2040 DATA168,250,179,6,189,172,200,243
2050 DATA212,230,225,143,238,248,253,46
2100 DATA32,119,200,165,251,133,80
2110 DATA32,119,200,165,251,24,170
2120 DATA164,80,76,240,255
2130 DATA32,119,200,165,251,41,7,133,81
2140 DATA32,119,200,165,251,170,165,81
2150 DATA208,18,138,240,2,169,8,133,82
2160 DATA173,22,208,41,247,5,82
2170 DATA141,22,208,96,201,1,208,18
2180 DATA138,240,2,169,8,133,82
2190 DATA173,17,208,41,247,5,82
2200 DATA141,17,208,96,201,2,208,16
2210 DATA138,41,7,133,82,173,22,208
2220 DATA41,248,5,82,141,22,208,96
2230 DATA201,3,208,16,138,41,7,133,82
2240 DATA173,17,208,41,248,5,82
2250 DATA141,17,208,96,201,4,208,18
2260 DATA138,240,2,169,16,133,82
2270 DATA173,17,208,41,239,5,82
2280 DATA141,17,208,96,201,5,208,5
2290 DATA138,141,24,212,96,201,6,208,5
2300 DATA138,141,5,220,96,138,141,138,2
2310 DATA96
```

Listing 2 — a demonstration program shows the versatility of the new commands

```
10 MODE=51828:GCOL=51770:PO=51334
20 GMOVE=52039:LINE=51754:TPO=51501
30 CLG=52151:GTEXT=52657:CRSR=53056
40 SPRITE=52164:SETSPRITE=52248
50 MUSIC=52453:VOL=52646:FX=53075
80 SYSGCOL,5,2:SYSGCOL,4,6
98 REM*IF YOU DO NOT HAVE PART ONE*
99 REM*GOTO290*
100 SYSMODE,0,0,1
110 SYSGCOL,1,0
120 FORN=0TO319STEP2
130 Y%=100-80*SIN(N*π/160):SYSPO,2,N,Y%
140 NEXT
150 SYSGCOL,1,7
160 FORN=0TO199STEP6
170 SYSGMOVE,30,100:SYSLINE,2,300,N
180 NEXT
190 SYSGCOL,0,8
200 FORN=0TO199STEP6
210 SYSGMOVE,310,100:SYSLINE,6,30,N
220 NEXT
290 SYSMODE,0,0,0
300 A(0)=8:A(1)=5:A(2)=12:A(3)=12:A(4)=15
310 FORN=0TO4
320 SYSGTEXT,N,0,235,0,A(N)
330 SYSGTEXT,N,1,5,2,A(N)
340 NEXT
400 FORN=0TO4
410 X=N+5:C=A(N)+256:SYSGTEXT,X,0,114,0,C
420 SYSGTEXT,X,1,39,2,C
430 NEXT
500 FORN=0TO4
510 X=N+10:C=A(N)+128:SYSGTEXT,X,0,16,0,C
520 SYSGTEXT,X,1,1,2,C
530 NEXT
590 FORN=0TO999:NEXT
600 SYSMODE,6,0,0:PRINT"□"
610 SYSGCOL,5,0:SYSGCOL,6,0
620 SYSGCOL,1,4
630 FORN=4TO315STEP4:SYSTPO,0,N,100:NEXT
640 SYSGCOL,1,8
650 FORN=0TO199STEP4
660 SYSTPO,0,4,N:SYSTPO,0,315,N
670 NEXT
680 SYSGCOL,1,6
690 FORN=8TO311STEP4
700 S=100-90*SIN((N-8)*π/152):SYSTPO,0,N,S
710 NEXT
720 SYSGCOL,1,2
730 FORN=8TO311STEP4
740 S=100-90*COS((N-8)*π/152):SYSTPO,0,N,S
750 NEXT
790 FORN=0TO999:NEXT
800 PRINT"□"
810 FORN=0TO39
820 Y%=12-12*SIN(N*π/20):SYSGCOL,4,N
830 SYSCRSR,N,Y%:PRINT"HELLO"
840 NEXT
920 M=15
925 X=32
930 FORO=7TO2STEP-1
940 FORS=23TO0STEP-2:T=5/(S+3)
944 SYSMUSIC,0,X,0,0,O,0
945 L=O-1:SYSMUSIC,1,X,0,0,L,0
947 FORTT=0TO99:NEXT
950 K%=S/2:SYSMUSIC,0,X,15,K%,O,0
951 L=O-1:SYSMUSIC,1,X,15,K%,L,0
970 FORN=0TO15STEPT:V%=15-N:SYSVOL,V%:NEXTN,S,O
980 SYSVOL,0
```

Micro Tip **TI-99/4A**

A question of definition

Home Computing Weekly has printed a number of programs for the VIC-20 in two or even three parts. Typically, the first program defines the graphics and then a second program uses them.

So, what can the TI-99/4A do?

The standard character set is always restored when a program is completed and another loaded, so we can't use those.

In TI BASIC, the cassette loader uses the same area of VDP RAM as user defined graphics. Loading a tape immediately removes your definitions for these characters, so that's out.

Hmm . . . Extended Basic uses different memory mapping! If we write a small program to define characters 127 to 143, and then load a second program from tape, the redefined characters can be used.

That isn't very many characters, of course, but if memory is really tight, using an initial character defining program will save over 300 bytes of memory at minimum, and possibly as much as 500 bytes. **That** can make a difference sometimes.

Try it. In Extended BASIC enter and run:

```
10 FOR T = 127 TO 143 :: CALL CHAR(T,"F1010101F1")
   :: NEXT T
```

Now load a tape program which uses (but does not define) characters 127 to 143. You will see they have retained their definitions from the first program.

If you do not have such a program, try something simple like:

```
10 FOR T = 127 TO 143 :: PRINT T;CHR$(T) :: NEXT T
```

Stephen Shaw

From cars to cruisers

Newly-launched games for a selection of computers get the once over from our review panel

Griddlebug/ Bogeyman TI-99/4A £7.95

Softstuff, PO Box 182, Cambridge

I can't help liking a game that rewards a high score with "Oh I say, jolly well done!" It makes a refreshing change from the usual jargon.

Griddlebug is fast moving, calling for quick responses. You have to keep griddlebug alive by guiding him to meals and avoiding the voracious Gridmaster by dodging behind Golden Apples or Power Packs. You must size up the situation quickly — delay is fatal. Success takes you to the next screen for more of the same.

The game is very difficult but persevere and you may discover Gridmaster's weaknesses, then life gets easier. There are 10 levels — I gave up at three. The set-up routine is tiresome, otherwise a very good game.

I cannot say the same for Bogeyman. Your task is to fight germs causing Clive's cold — yes, that sort of Bogeyman. It is difficult to control with very poor key response. Scoring system is incomprehensible and the game must be RUN for each play. The instructions go on in a humorous way, which is fun but makes things less than clear. There are no on-screen instructions for either. **C.E.**

instructions	30%
playability	70%
graphics	80%
value for money	75%

★ ★ ★ ★

Countdown VIC20 + 8K/16K £5.50

Paramount, 67 Bishopton Lane, Stockton, Clevedon

This is a goodie. Once you realise your best chance of survival, and high score, is to keep moving, it shows all the ingredients of a really addictive game.

The scene is the countdown to a bomb going off. You must get out of the house (screen one), through the jungle (screen two) and down the sewers (screen three) where you find and defuse the bomb. If you succeed you are straight back to screen one for another go. Each screen has it quota or hazards, firing bolts, dropping coconuts and so on to be avoided. Unusually the first screen is the hardest.

With three screens, the programmer has gone to town on the graphics and colours. It shows what can be done with an expanded VIC. There are three skill levels but, rather than speeding up the action, it cuts down defusing time.

My main complaint is that it only loaded properly about once in 10 attempts. I know it could just be my copy, but with an increasing degree of copy protection we seem to get increasing unreliability of loading. Sort it out fellows. No one wants even a brilliant game if it's too much of a pain to load. **B.J.**

instructions	85%
playability	95%
graphics	92%
value for money	90%

★ ★ ★ ★

Picture Puzzles Dragon 32 £5.95

Lyversoft, 66 Lime Street, Liverpool

Standard. You move them about using cursor keys spelled "curser" in the instructions!) and A rather surprising release from a company which seems to specialise in fast action games. This has no action at all, being a sliding block puzzle program.

You must remember the sort of thing — you have a picture surrounded by a frame and one part is empty so that you can rearrange the picture and then try to reform it again.

This program contains six pictureseach in 15 pieces and they are of a reasonably high graphic press ENTER to make the move.

You are shown the initial puzzle and then you observe the scrambling process. You can even create your own pictures if you so desire and have the time to spend.

What I still find hard to accept is that anyone will want to pay this amount of money for something which in its original form cost pennies. If it's your thing then it will probably satisfy you. It certainly does all it claims but it bores me silly.

D.C.

instructions	60%
playability	60%
graphics	80%
value for money	60%

★ ★ ★

3-D Race TI-99/4A £6

Stainless Software, 10 Alstone Road, Stockport, Cheshire SK4 5AH

You are at the wheel of a high speed racer and you must overtake five other cars plus a ghost car which appears from time to time. After selecting a skill level (one — six), the five cars appear on the track and zoom off. You select first gear and accelerate after them. You can change lanes, accelerate and brake.

Even at level one the game turned out to be pretty difficult. Although instructions accompany the tape I found difficulty at first in understanding what was going on, in particular which car I was supposed to be driving. However, after several plays I got the idea and started enjoying the game. Speed, time, temperature and fuel are at the bottom of the screen. Graphics, giving a drivers eye view of the track, are excellent.

There are some pretty sophisticated car racing games on the market and, to be fair, 3-D Race does not come up to their standard but then it is written in BASIC (it has to be for the standard TI) and the programmers have used the language extremely well. All in all, good value for money. **D.B.**

instructions	80%
playability	80%
graphics	90%
value for money	90%

★ ★ ★ ★ ★

Cruiser/ Character Generator TI-99/4A £5.55

Solway Software, 6 Curzon Street, Maryport, Cumbria CA15 6LL

In Cruiser you go on a long pub crawl round a canal seeking refreshment at each of the lockside pubs. It doesn't matter if you're not a drinker as you may either collect beer or lemonade!

Using the arrow keys, you steer round the waterway starting from a marina at the top. The course becomes gradually more blocked as other boats appear and moor. Crashing into these too often results in a long walk home or a soaking.

You are given a bot load of provisions, which gradually become depleted. Re-stocking can only be achieved by returning to the starting point.

The lockside pubs close after serving each pint, so during your journey they must be regularly reopened to continue scoring.

Overall, amusing with plenty of variety, skill levels run from 1 to 30, well crashproofed and even an option for users with black and white TVs.

Side 2 has a useful character generator for defining your own characters and obtaining their hexadecimal codes. **J.W.**

instructions	100%
playability	75%
graphics	80%
value for money	100%

★ ★ ★ ★ ★

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Your skill as commander of a moonbase is called upon in Gary Burrows' strategy game for either model of the Spectrum

How it works

50-138 initial set up
142-148 decrease in supplies each year
152-160 screen display
200-250 oxygen
250-300 food
300-350 water
350-400 missiles
400-450 minerals
450-500 money
800-818 alien attack
900-912 end of game

You'll need to think sensibly when you play Moonbase ZX, my strategy game for either model of the Spectrum.

You play the part of the commander of a moon base and you must keep the base operational for as long as possible, which means ensuring you have enough oxygen, food, water, minerals and money.

Try to keep the base running for as many years as possible.

The program can be made easier or harder by changing the random values of v throughout.

```
  2 REM *moonbase zx*
  3 REM *by G.W.Burrows*
  4 REM
  5 REM *on 48k zx spectrum*
 50 LET y=4000: LET p=50: LET ol=200: LET fs=200: LET mi=2: LET m=0: LET mo=100
: LET ms=200
 52 INK 0: BORDER 6: PAPER 7: CLS
 60 LET a$="If you wish to buy more": LET b$="then enter the number of": LET c$
="you wish to buy": LET d$="If not then press number (0)": LET e$="you currently
 have "
 138 GO TO 140
 140 CLS
 142 LET ol=ol-INT (RND*25): LET fs=fs-INT (RND*25): LET ms=ms-INT (RND*25): LET
 y=y+1
 144 IF ol<50 THEN LET p=p-10
 145 IF ol>=50 AND ol<=100 THEN LET p=p+INT (RND*5)
 146 IF ol>100 THEN LET p=p+INT (RND*10)
 148 IF ol<0 OR fs<0 OR ms<0 OR p<0 THEN GO TO 900
 152 PRINT AT 0,1;"MOONBASE ZX"
 154 PRINT AT 2,0;"( )YEAR: ";y;AT 3,0;"( )POPULATION: ";p;AT 4,0;"(1)OXYGEN LEV
EL: ";ol;AT 5,0;"(2)FOOD SUPPLY: ";fs;AT 6,0;"(3)WATER SUPPLY: ";ms;AT 7,0;"(4)M
ISSILES: ";mi;AT 8,0;"(5)MINERALS: ";m;AT 9,0;"(6)MONEY: ";mo
 156 IF RND>.8 THEN GO TO 800
 160 PRINT : PRINT " PRESS A NUMBER"
 162 INPUT n: IF n<1 OR n>6 THEN GO TO 162
 163 BEEP .25,14: BEEP .5,10: CLS : GO TO 150+(50*n)
 200 PRINT "OXYGEN LEVEL"
 202 PRINT : PRINT "you have ";ol;" units"
 204 LET l=ol: GO SUB 700
 206 LET v=INT (RND*2+1): PRINT e$;mo
 208 PRINT : PRINT "Oxygen costs ";v;" per unit"
 210 PRINT a$;" oxygen ": PRINT b$;" units ": PRINT c$: PRINT d$
 216 INPUT n: IF n<0 OR n*v>mo THEN GO TO 214
 218 LET ol=ol+n: LET mo=mo-(n*v): PRINT : PRINT "OK": PAUSE 300: GO TO 140
 250 PRINT "FOOD SUPPLY"
 252 PRINT : PRINT "you have ";fs;" kilograms"
 254 LET l=fs: GO SUB 700
 256 LET v=INT (RND*2+1)
 258 PRINT e$;mo
 260 PRINT : PRINT "food costs ";v;" a kilogram"
 262 PRINT a$;" food ": PRINT b$;" kilos ": PRINT c$: PRINT d$
 266 INPUT n: IF n<0 OR n*v>mo THEN GO TO 266
 268 LET fs=fs+n: LET mo=mo-(n*v): PRINT : PRINT "OK": PAUSE 300: GO TO 140
 300 PRINT "WATER SUPPLY"
 302 PRINT : PRINT "you have ";ms;" pints"
 304 LET l=ms: GO SUB 700
 306 LET v=INT (RND*2+1)
 308 PRINT e$;mo
 310 PRINT : PRINT "water costs ";v;" a pint"
 312 PRINT a$;" water ": PRINT b$;" pints ": PRINT c$: PRINT d$
 316 INPUT m: IF n<0 OR n*v>mo THEN GO TO 316
 318 LET ms=ms+n: LET mo=mo-(n*v): PRINT : PRINT "OK": PAUSE 300: GO TO 140
 350 PRINT "MISSILES"
 352 PRINT : PRINT "you have ";mi;" missiles"
 354 LET v=INT (RND*10+1)
 356 PRINT e$;mo
 380 PRINT : PRINT "missiles cost ";v;" each"
 382 PRINT a$;" missiles ";b$;" them ": PRINT c$: PRINT d$
 384 INPUT n: IF n<0 OR n*v>mo THEN GO TO 384
 386 LET mi=mi+n: LET mo=mo-(n*v): PRINT : PRINT "OK": PAUSE 300: GO TO 140
 400 PRINT "MINERALS"
 402 PRINT : PRINT "you have ";m;" kilograms"
 404 PRINT : PRINT "you currently have ";ol;" oxygen     units"
 406 PRINT : PRINT "you can excavate for minerals    on the moon surface;you must
    take oxygen with you"
 410 PRINT "The more oxygen you take the     longer you can excavate and the more
minerals you can bring back"
 412 PRINT "enter the number of units you    are taking": PRINT d$
 414 INPUT n: IF n<0 OR n>ol THEN GO TO 414
 416 IF n=0 THEN PRINT "OK": PAUSE 300: GO TO 140
 418 LET v=INT (RND*(n/3)+1)
 420 PRINT "OK": PAUSE 300: PRINT "you managed to bring back ";v: PRINT "kilogra
ms": PAUSE 300
 422 LET m=m+v: LET ol=ol-n: GO TO 140
 450 PRINT "MONEY": PRINT e$;mo
 453 PRINT : PRINT "you have ";m;" minerals"
 454 PRINT : PRINT "you can make money by selling    your minerals"
 456 LET v=INT (RND*8+1)
 458 PRINT "you would receive ";v;" per": PRINT "kilogram"
 460 PRINT "enter the number of minerals     you wish to sell": PRINT d$
 462 INPUT n: IF n<0 OR n>m THEN GO TO 462
 464 LET m=m-n: LET mo=mo+(n*v): PRINT "OK": PAUSE 300: GO TO 140
 700 IF l>100 THEN PRINT "level: SUPPORTIVE"
 704 IF l>=50 AND l<=100 THEN PRINT "level: LOW"
 706 IF l<50 THEN PRINT "level: CRITICAL"
 708 RETURN
 800 PAUSE 200: CLS
 806 PRINT "you are under attack from alien spaceships"
 807 PRINT : PRINT "use your missiles to stop them"
 812 PRINT "(not more than 2 at a time)": PAUSE 100
 813 IF mi<1 THEN PRINT "  NO MISSILES LEFT!!!": PAUSE 400: GO TO 900
 814 INPUT n: IF n<0 OR n>2 THEN GO TO 814
 816 IF n=1 AND RND>.7 OR n=2 AND RND>.3 THEN PRINT AT 6,0;"OK-": PAUSE 300: PR
INT "well done/they have gone": PRINT "    BEWARE/they may return": LET mi=mi-n:
PAUSE 300: GO TO 140
 818 PRINT AT 6,0;"OK-": PAUSE 300: PRINT "you missed/try again": LET mi=mi-n:
                                                  ": GO TO 813
PAUSE 120: PRINT AT 6,0;"
 900 CLS : PRINT AT 11,5; INK 3; FLASH 1;"LIFE ON BASE TERMINATED"
 902 IF mi<1 THEN LET a$="destroyed by aliens"
 904 IF ol<0 THEN LET a$="oxygen starvation"
 906 IF fs<0 THEN LET a$="food starvation"
 907 IF ms<0 THEN LET a$="liquid starvation"
 908 IF p<1 THEN LET a$="population dead"
 909 FOR i=0 TO 7: BORDER i: PAUSE 70: BEEP .2,i: NEXT i
 910 PRINT AT 9,5;a$
 912 PRINT AT 13,5;"you served for ";y-4000;" years": STOP
```

Hints on conversion

Moonbase will run on the 16K ZX81 after removing Spectrum-only commands such as INK, PAPER and BORDER. It should also work on most other home computers with the minimum of change.

Variables

n input variable
v random variable
ol oxygen level
fs food supply
ws water supply
y year
p population
mi missiles
mo money
m minerals

Game for some fun?

This batch of new Spectrum games features a hamburger, mail trains and centipedes. Read our reviews before you buy

Earth Defence £4.95

Artic Computing, Main Street, Brandesburton, Driffield YO25 8RL

Earth Defence is Arctic's version of Missile Command. You must defend your cities and missile sites from destruction by invading nuclear missiles — a very unpleasant scenario.

The missiles are represented by lines moving down the screen. You must move your sights and fire in anticipation of the missile's position.

The game is very difficult to play, even on the easiest skill level, because there are so many missiles, and it is hard to judge when to fire. To add to the difficulty you only have a limited number of missiles, so it seems best to limit yourself to defending one city.

The graphics are fairly uninspired with the exception of the explosions. The sound is a good simulation of white noise. Should you survive the first attack wave you are given bonus points for the number of remaining missiles and undestroyed cities, and a new attack commences.

There are three levels of play, with one or too player option. The game also works with the Sinclair and Kempston joystick interfaces.

I didn't enjoy Earth Defence, but it seems an adequate version of what is, in my opinion, a poor arcade game. **S.E.**

instructions	80%
playability	35%
graphics	45%
value for money	45%

★ ★

Rapedes £5.95

Visions (Software Factory), Felgate Mews, Studland St., London W6 9JT

If a spider in the bath gives you the shivers then Rapedes — "The centipedes' revenge" — is perhaps one to avoid because you are confronted not only with giant arachnids but Spectrum owner eating snails and centipedes to boot.

Basically it's a traditional space invader-type game where aliens have been replaced by assorted creepies which advance down the screen through a field of mushrooms.

Graphics are fair with a particularly ugly spider and I found the text used for instructions and scores to be much clearer than many games.

There are five speed levels, on the highest of which life is usually short and so hectic that the hold feature is very useful in order to take a breather, sort out your next move or simply fetch a tin of insecticide. The option to use a Kempston joystick is available and would make life much easier.

On the whole it will appeal to those in search of "blast everything in sight" games. But, while by no means a bad game, I found interest began to wane quite quickly. **D.J.**

instructions	80%
playability	80%
graphics	85%
value for money	75%

★ ★ ★ ★

Mr Wimpy 48K £5.90

Ocean, Ralli Building, Stanley St., Manchester M3 5FD

A double helping of fun is on the menu when you taste this mouth watering offering from Ocean. Hero of the show is that traditional British dish, the Wimpy hamburger.

In the first stage of the 100 per cent machine code program as Mr Wimpy you take a tray and cross the screen Frogger style avoiding the attentions of Waldo the burger thief and moving manhole covers!

If successful in hanging onto your tray you now have one of the three ingredients for a Wimpy which you have to carry back to the start. Repeat for each ingredient and you move to the next stage where you dash round the kitchen making the Wimpy ingredients drop onto a plate.

The villians in part two are kitchen rebels against which your only defence is a limited supply of pepper replenished only if you pick up bonus gems, ice creams or a cup of coffee.

The game, playable with keyboard or joystick, has very good graphics with particularly smooth movement. All in all a good example of the tremendous improvement in Spectrum game graphics on recent offerings. **D.J.**

instructions	
playability	85%
graphics	90%
value for money	90%
	80%

★ ★ ★ ★

Pat the Postman 48K £6.95

Mikro-Gen, 24 Agar Crescent, Bracknell, Berks.

A maze game in which Postman Pat has to find a number of parcels hidden in the houses of a small town and deliver them to a mail train. Roaming the streets are a couple of nasties, who will do Pat in if they catch him, though he does have three lives.

An easy loading produced a request for a choice of amateur (three parcels to deliver) or professional (five parcels).

This selected, a very pretty display appears immediately. No on-screen instructions. An endless succession of trains runs across the top of the screen, and at the bottom is the post office, which has a nasty habit of bursting into flames so Pat has to break off and run to the fire station for help.

Points are scored for successful mail runs and these are shown in a panel at the bottom of the screen. This also shows lives unused and a message HI = 0 which must be the Hall of Fame referred to on the insert.

A lively little game with attractive graphics and an amusing story-line, but not very demanding or varied. I suspect it is aimed at the younger games player who will probably enjoy it. **H.C.**

	30%
instructions	60%
playability	60%
graphics	50%
value for money	

★ ★ ★

Jumbly 48K £6.95

dk'Tronics, Shire Hill Industrial Estate, Saffron Walden, Essex CB11 3AX

Here's a program for puzzle freaks with the chance to win £150 or more into the bargain.

Like most good things the idea behind Jumbly is simple, based on a "slider" puzzle, where you slide plastic tiles about in a grid to form a picture or achieve a set order of numbers or letters.

Starting with one of three titles of the animated pictures available, the computer jumbles up the blocks forming the picture in a five by four grid and loses one block to leave room for sliding using keyboard or joystick. Complete the puzzle within the target number of moves and you move on to the next title. Apart from the three starter pictures, the others remain secret until you have successfully completed the previous picture.

Once past the starter section the game becomes more complicated by the introduction of screen scrolling in different directions at various speeds. dk's description of this is "mind boggling". Mine is less polite but this is a family magazine!

If you manage to complete the final picture you will be eligible to enter a design competition for Jumbly II.

Difficult, challenging — but very enjoyable. **D.J.**

instructions	80%
playability	85%
graphics	90%
value for money	75%

★ ★ ★ ★

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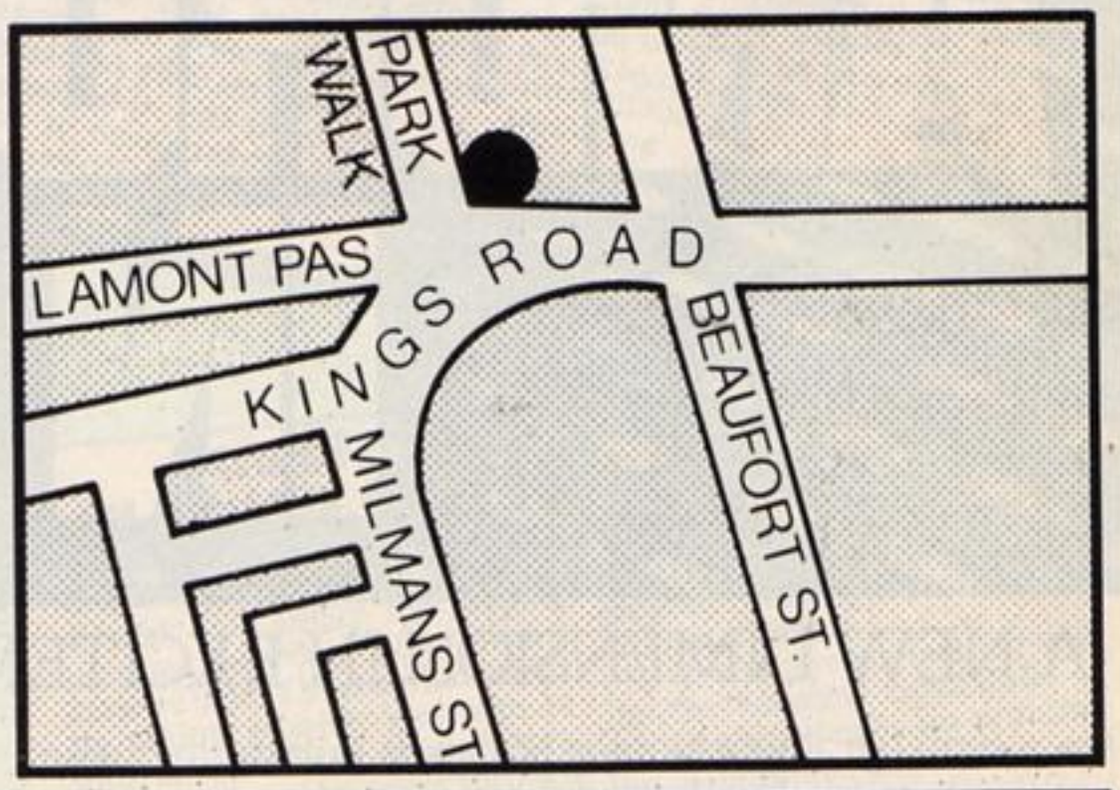

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Seriously speaking

You always said your computer was for more than playing games, didn't you? Here's what our review team thought of some programs to help you do that

Musicmaster 48K Spectrum £9.95

Sinclair Research, 25 Willis Road, Cambridge CB1 2AQ

If you are learing the rudiments of music, this program should help your studies.

On occasions, I have been known to produce the odd note out of various instruments so I was naturally very interested. The tape comes with explanatory booklet, and overlay strip for computer keys.

There are many options. Perhaps one of the most interesting produces 'notes on music'. This demonstrates pitch, and duration, of notes, as well as all the rests. Also the time and key signatures are explained.

If you fancy yourself as a composer you can, replay and alter your own tune of up to 1,000 notes.

A few personal comments. I can never remember seeing a dotted semibreve rest. Perhaps they have just evaded me. or maybe I've been playing the wrong music. Don't all major scales have the form TTSTTTS? And I believe that rhythm is too complicated to be just placed under the general heading of time and bar line.

These comments are personal, and not intended to detract from the excellence of the program. Besides, I would assume that any serious student would have the guidance of a human tutor. I do feel, though, that the program may be priced out of the reach of the younger budding musician.

B.B.

instructions	100%
ease of use	100%
display	100%
value for money	75%

★★★★★

Record Keeper BBC 32K £13.80

British Broadcasting Corporation, 35 Marylebone High Street, London, W1M 4AA.

An extremely well though out database package comprising of cassette and a 48-page manual. This is written to a very high standard, enabling anyone to get the program running in a very short time.

That is not the limit of the BBC's generousity, however, besides the cassette version there is a disc version too. What's more, there is a full explanation of their differences and how files from one may be read by the other.

The program is very robust and flexible with particularly good 'wild card' search facilities. One other novel is the superb report generator program also enclosed, which allows an almost infinite variety of print styles and formats, all of which can be saved, making it invaluable for use by small businesses, clubs etc.

All this praise and no problems? Well, the only real and difficult problem I found is the small number of records it can keep in a file. All have to be in memory at the same time so only about 90 names and addresses can be held per file. This does increase speed, however, and as long as you can work within these limits this is the program for you.

D.C.

instructions	95%
ease of use	95%
display	100%
value for money	

★★★★★

Cartoon Animation Spectrum £10

Fowler Software, Hendon Mill, Nelson, Lancs.

The advert claims the demo shows large-style characters walking across the screen. All I can say is: they don't half walk funny in Lancashire!

The legs open and close, from the knee down, but at no time does any leg move past the other. Nor is it explained how this extra-ordinary effect was created, should you be daft enough to wish to copy it.

In fact, this preliminary effort seems to have exhausted the programmer, since all the other characters glide statically on, one leg poised in mid-air for the step that it never taken, the other apparently attached to an invisible roller skate.

The idea seems to be that you design a cartoon-type line drawing on a combination of character blocks and can glide it up, down or sideways. But only in black and white — coloured characters cannot move.

The ability to understand the instructions — a 16-page booklet plus an errata sheet — means you probably already have enough knowledge to program a similar but better effect, and in full colour, yourself.

Describing this as "animation" insults the intelligence, and there are many good utilities on the market offering far more for far less. Avoid this one.

D.C.

instructions	45%
ease of use	20%
display	10%
value for money	10%

★

Beyond BASIC 48K Spectrum £9.95

Sinclair Research, 25, Willis Road, Cambridge CB1 2AQ

"Take the agony out of assembler — the mystery out of machine code", screams the packaging. Anyone else grappling with learning machine code will know how eagerly I fell upon this program.

It has three sections: 1 ROM & RAM store, registers and simple machine code elements explained, 2 14 assembler commands are described, with 'moving' examples, 3 a mini-assembler to create your own program with these commands and see their effects.

The registers and memory are graphically represented, showing their state before, during, and after each command — helpful to anyone who finds pictures easier than straight text.

But, assuming that nobody is daft enough to start machine code before becoming proficient in BASIC, much of the explanation covers known ground, the commands available are a very small selection of total assembler commands and, although the high/low byte order is demonstrated, your attention is not drawn, nor is explanation given.

But, if you have already ploughed through the books and are now searching for the 'missing link' between understanding assembler code and its application, then this program will add nothing to your knowledge.

D.C.

instructions	90%
ease of use	85%
display	85%
value for money	75%

★★★★

Cassfile TI-99/4A £4.95

Christine Computing, 6 Florence Close, Watford, Herts

Cassfile is a utility for keeping personal records on file using a cassette tape. The program begins by asking whether you wish to load an old file or create a new one. You are then taken through the various procedures for which-ever option you select.

Up to five titles per record may be specified and a maximum of 62 records kept.

After data has been entered you are offered various options from menu to search, list and add to files, or display, delete or change a record. Updates are provided after each entry has been completed.

Although the program has been competently written, various spelling mistakes fail to give that professional finish. There were also no written instructions provided — at least not with my review copy.

Although the cassette was labelled "instructions in program" they certainly weren't on screen either.

If you're already familiar with the file handling capabilities of the IT then there's no problem, but a beginner might find and procedures confusing.

A comprehensive set of instructions and, on tape, an example set of data files would transform Cassfile from being just adequate to very good.

J.W.

instructions	n/a
ease of use	75%
display	60%
value for money	80%

★★★★

MR CHIP SOFTWARE

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VIC-20 GAMES AND UTILITIES

JACKPOT

This is it, the ultimate Fruit Machine for the VIC with nudge, hold and respin 100% machine code. "Overall Jackpot is a beautifully written simulation giving superb graphics, animation and use of colour. In fact, this program makes Commodore's Fruit Machine cartridge look unbelievably cheap and nasty." Home Computing Weekly No. 20 19/7/83 ..... **£5.50**

KWAZY KWAKS

Accuracy and speed are required for this Shooting Gallery, superb use of colour and graphics in this new and challenging game from the author of Jackpot. 100% machine code, joystick or keyboard control **£5.50**

PACMANIA

Choose your own game from the following options — difficulty 1-3 speed 1-3, size of maze 1-3, visible or invisible maze, still or moving power pills, define your own key controls, any combination, if this is your type of game, then this is the one for you, for the 3K expand VIC **£5.50**

BUGSY (Joystick Only)

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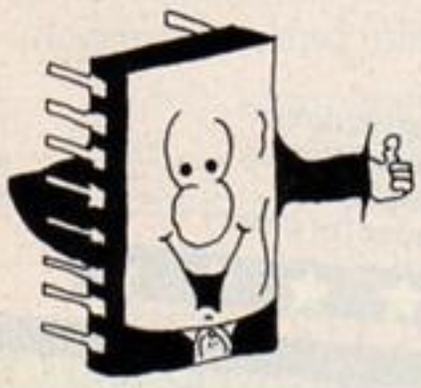

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DEALER ENQUIRIES WELCOME

We welcome Access

Space gets crowded as you fight off the invaders

New features make Space Debris a challenging game. Kevin Boyd wrote the program for the BBC model B micro with two joysticks

Unlike most shoot-'em-up games written in BASIC, my Space Debris game is fast and addictive and has some original features which could only be achieved on the BBC micro.

The program runs in mode 2 on the model B with operating system 1.2 and occupies 5.8K and requires a pair of joysticks.

You control a space ship at the bottom of the screen and have to shoot the approaching invaders with your laser beam.

When the beam hits an invader it may just chop a bit off or the resulting explosion may leave some debris behind — hence the name of the game.

How it works

10-200 set up variables, display instructions
210-250 set up sound envelopes
260-460 set up user-defined graphics for aliens
490 choose next alien
500 check for explosion if alien hit
520-560 choose next alien after you have been playing for a while. This is so the screen gets more crowded as the game goes on
570-610 draw canyon
650-700 joystick control sub-routine
710-1460 PROCedure to draw aliens on screen
1470-1560 PROCedure to fire laser
1570-1800 explosion sub-routine for alien hit
1810-1960 more shape definition and drawing
1970-2110 instructions
2120-2180 joystick options
2190-2500 ship explosion
2510-2620 score, end of game PROCedure, extra ship
2690-2750 error trap — ESCAPE pressed. If you keep getting this type 1. Then REPORT: PRINT ERL will tell you about the error. Disc users must set PAGE = &E00

This feature makes the game difficult because you cannot rely on a single hit to destroy an invader, which is more real to life than if you hit a wing tip and the entire invader explodes.

The waves build up with different multi-coloured invaders appearing along with the previous waves, so after a while the screen gets pretty full.

If you manage to survive the first five waves you will find the sixth wave is very different.

First of all the screen changes colour — making some of the invaders difficult to see — and large solid triangles appear.

```
  10 REM ********************************
  20 REM *                              *
  30 REM *  S P A C E   D E B R I S     *
  40 REM *                              *
  50 REM *          B Y                 *
  60 REM *                              *
  70 REM *   K E V I N   B O Y D        *
  80 REM *                              *
 100 REM *                              *
 110 REM ********************************
 120 ONERRORGOTO2690
 130 MODE7
 140 PROC_INTRO
 150 MODE2
 160 SH=3
 170 S=0
 180 SHIP%=640
 190 SCORE=0
 200 P=30
 210 ENVELOPE1,1,20,-2,20,10,100,1,30,-4,0,-5,120,80
 220 ENVELOPE2,1,0,0,0,1,1,1,30,-1,0,-1,126,60
 230 ENVELOPE3,3,0,0,0,1,1,1,127,0,0,-1,126,0
 240 ENVELOPE4,1,20,-2,1,10,5,10,30,-4,0,-5,126,80
 250 ENVELOPE5,1,-26,-26,-26,255,255,255,50,0,0,-50,12
6,0
 260 VDU23,224,0,0,0,0,0,16,16,16
 270 VDU23,225,16,16,16,16,16,0,0,0
 280 VDU23,226,130,68,40,68,40,0,0,0
 290 VDU23,227,127,1,1,1,1,1,0,0
 300 VDU23,228,0,254,134,134,134,134,254,0
 310 VDU23,229,0,0,120,72,72,120,0,0
 320 VDU23,230,0,0,0,48,48,0,0,0
 330 VDU23,231,153,165,165,255,153,153,129,129
 340 VDU23,232,31,32,64,128,128,64,32,31
 350 VDU23,233,0,0,0,127,127,0,0,0
 360 VDU23,234,248,4,2,1,1,2,4,248
 370 VDU23,235,0,0,0,254,254,0,0,0
 380 VDU23,236,0,0,0,0,60,36,24,126
 390 VDU23,237,0,0,60,126,0,0,0,0
 400 VDU23,238,24,24,0,0,0,0,0,0
 410 VDU23,239,255,126,60,24,0,0,0,0
 420 VDU23,240,129,66,60,60,60,60,66,129
 430 VDU23,241,129,66,36,0,0,36,66,129
 440 VDU23,242,129,66,0,0,0,0,66,129
 450 VDU23,243,255,255,255,255,255,255,255,255
 460 VDU23,244,0,0,0,0,24,60,126,255
 470 TIME=0:FORD=1TO300:NEXTD
 480 REM**** MAIN ROUTINE ********
 490 IFTIME>10THENA=RND(1200):PROC_SHAPE1:VDU30:VDU11
 500 IF POINT(SHIP%,30)<>0OR POINT(SHIP%+25,40)<>0OR P
OINT(SHIP%+50,30)<>0THENPROCSHIP_EXP:GOTO480
 510 IFTIME>500 THENA=RND(1200):PROC_SHAPE2:VDU30:VDU1
1
 520 IFTIME>1000AND TIME <5000 THENA=RND(1200):PROC_SH
APE3:VDU30:VDU11
 530 IF POINT(SHIP%,30)<>0OR POINT(SHIP%+25,40)<>0OR P
OINT(SHIP%+50,30)<>0THENPROCSHIP_EXP:GOTO480
 540 IFTIME>2000AND TIME<5000 THENA=RND(1200):PROC_SHA
PE4:VDU30:VDU11
 550 IFTIME>3000 AND TIME<7000THENA=RND(1200):PROC_SHA
PE6:VDU30:VDU11
 560 IF POINT(SHIP%,30)<>0OR POINT(SHIP%+25,40)<>0OR P
OINT(SHIP%+50,30)<>0THENPROCSHIP_EXP:GOTO480
 570 IFTIME>15000ANDTIME<15100THENVDU19,0,14,0,0,0
 580 IFTIME>5000ANDTIME<5100THENVDU19,0,13,0,0,0
 590 IFTIME>13000ANDTIME<13100THENVDU19,0,10,0,0,0
 600 IFTIME>20000THENVDU19,0,0,0,0,0
 610 IFTIME>5000 AND TIME<10000 AND RND(20)=10 THENPRO
```

You can dodge or shoot at the triangles but you will only be able to take chunks out of them. These are worth 100 points each.

The seventh wave is a variation on the sixth.

Two triangles join to form a V-shaped canyon. Of course, you will always head for the thinnest part of the canyon to shoot your way through, but inside the canyon are two partially joined flashing black and white stars. If you hit these you score 1,000 points.

You start off with three lives and gain one extra with every 2,000 points scored.

Your score and the number of lives left are displayed each time you lose a ship.

An elaborate three-tone sound effect will sound when an extra life is given.

Two methods of controlling your craft are given:

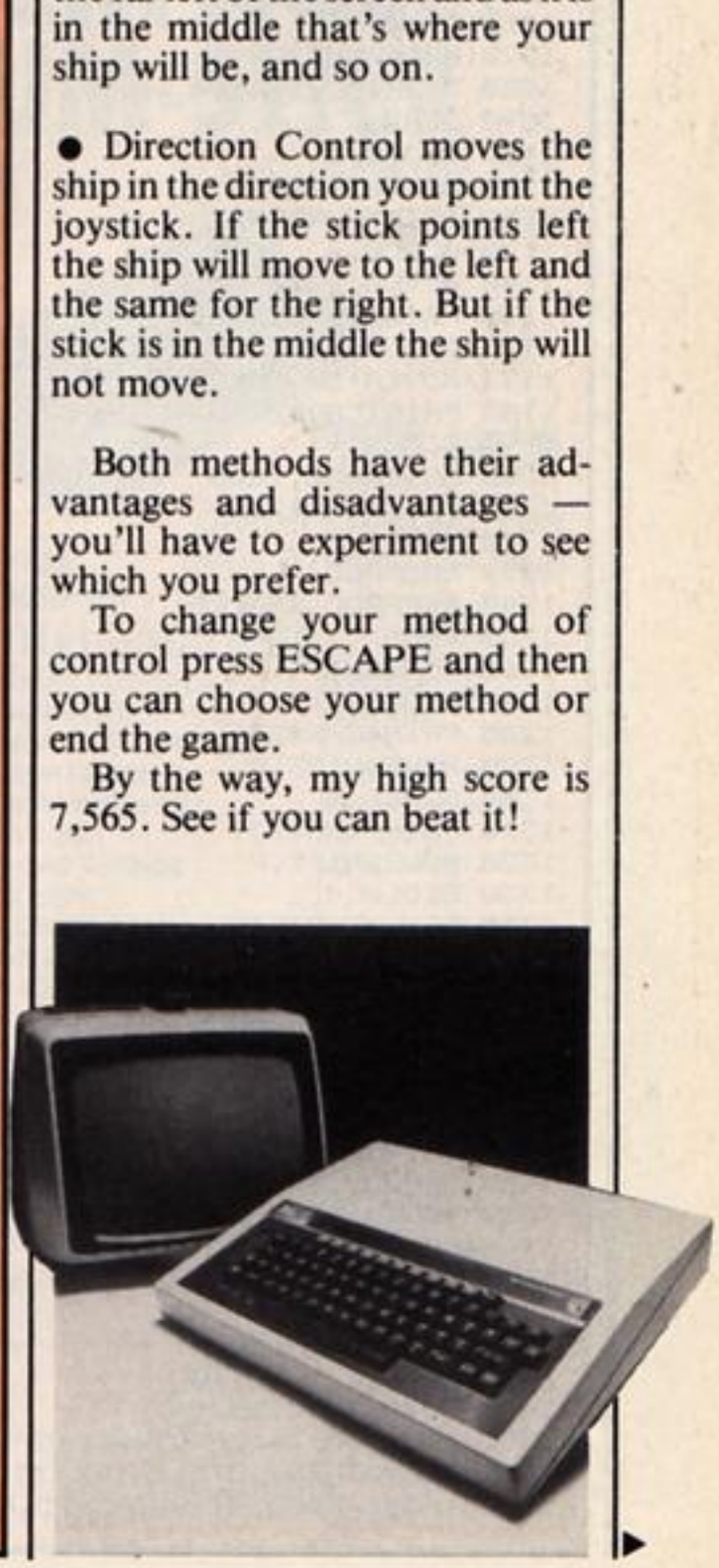
- Absolute Control moves the ship relative to the position of the joystick and needs delicate control. It means that if the joystick is on the far left the ship will be on the far left of the screen and as it is in the middle that's where your ship will be, and so on.

- Direction Control moves the ship in the direction you point the joystick. If the stick points left the ship will move to the left and the same for the right. But if the stick is in the middle the ship will not move.

Both methods have their advantages and disadvantages — you'll have to experiment to see which you prefer.

To change your method of control press ESCAPE and then you can choose your method or end the game.

By the way, my high score is 7,565. See if you can beat it!



BBC PROGRAM

```
C_SHAPE7
  620 IFTIME>10000 AND RND(10)=5 THENPROC_SHAPE8:PROC_S
HAPE9
  630 PROC_SHAPE5
  640 IF POINT(SHIP%,30)<>0OR POINT(SHIP%+25,40)<>0OR P
OINT(SHIP%+50,30)<>0THENPROCSHIP_EXP:GOTO480
  650 JOY%=ADVAL(1)
  660 FIRE%=ADVAL(0)AND3
  670 IFFIRE%=1THENPROC_FIRE
  680 IFOPTION=1THEN SHIP%=JOY%/56+15
  690 IFOPTION=2THEN IFJOY%<1000 AND SHIP%>10THEN SHIP%
=SHIP%-32 ELSE IF JOY%>63000 AND SHIP%<1200 THEN SHIP%=
SHIP%+32
  700 IFS>=2000ANDS<>0THENPROCEXTRA_SHIP
  710 GOTO480
  720 DEFPROC_SHAPE1
  730 VDU5
  740 MOVEA,1000
  750 GCOL0,4
  760 PRINTCHR$224
  770 MOVEA,1000
  780 GCOL0,5
  790 PRINTCHR$225
  800 MOVEA,1000
  810 GCOL0,7
  820 PRINTCHR$226
  830 VDU4
  840 ENDPROC
  850 DEFPROC_SHAPE2
  860 VDU5
  870 MOVEA,1000
  880 GCOL0,4
  890 PRINTCHR$227
  900 MOVEA,1000
  910 GCOL0,5
  920 PRINTCHR$228
  930 MOVEA,1000
  940 GCOL0,11
  950 PRINTCHR$229
  960 MOVEA,1000
  970 GCOL0,12
  980 PRINTCHR$230
  990 VDU4
 1000 ENDPROC
 1010 DEFPROC_SHAPE3
 1020 VDU5
 1030 GCOL0,7
 1040 MOVEA,1000
 1050 PRINTCHR$231
 1060 VDU4
 1070 ENDPROC
 1080 DEFPROC_SHAPE4
 1090 VDU5
 1100 GCOL0,5
 1110 MOVEA,1000
 1120 PRINTCHR$232
 1130 GCOL0,4
 1140 MOVEA,1000
 1150 PRINTCHR$233
 1160 GCOL0,5
 1170 MOVEA+50,1000
 1180 PRINTCHR$234
 1190 GCOL0,4
 1200 MOVEA+50,1000
 1210 PRINTCHR$235
 1220 VDU4
 1230 ENDPROC
 1240 DEFPROC_SHAPE5
 1250 VDU5
 1260 MOVESHIP%,P
 1270 GCOL0,2
 1280 PRINTCHR$236
 1290 MOVESHIP%,P
 1300 GCOL0,3
 1310 PRINTCHR$237
 1320 MOVESHIP%,P
 1330 GCOL0,4
 1340 PRINTCHR$238
 1350 VDU4
 1360 ENDPROC
 1370 DEFPROC_SHAPE6
 1380 VDU5
 1390 GCOL0,9
 1400 MOVEA,1000
 1410 PRINTCHR$239
 1420 GCOL0,10
 1430 MOVEA,1000
 1440 PRINTCHR$244
 1450 VDU4
 1460 ENDPROC
 1470 DEFPROC_FIRE
 1480 SOUND1,1,10,10
 1490 MOVESHIP%+25,50
 1500 A=0:FORF%=100TO1000STEP19.2
 1510 IFA=0THENPLOT5,SHIP%+25,F%
 1520 IFA=0ANDPOINT(SHIP%+25,F%+4)<>0THENPROC_EXP
 1530 NEXT
 1540 IFA=0THENFR%=F%
 1550 MOVESHIP%+25,50:PLOT7,SHIP%+25,FR%
 1560 ENDPROC
 1570 DEFPROC_EXP
 1580 IFPOINT(SHIP%+25,F%+4)=6THENSCORE=SCORE+100:SOUND
2,4,190,10:S=S+100
 1590 IFPOINT(SHIP%+25,F%+4)=15THENPROC_STAR
 1600 IFPOINT(SHIP%+25,F%+4)<>6ANDPOINT(SHIP%+25,F%+4)<
>15THEN SCORE=SCORE+50:SOUND0,2,4,10:S=S+50
 1610 VDU5
 1620 GCOL0,7
 1630 MOVESHIP%,F%
 1640 PRINTCHR$240
 1650 MOVESHIP%,F%
 1660 GCOL0,0:PRINTCHR$243:GCOL0,7
 1670 MOVESHIP%,F%
 1680 PRINTCHR$241
 1690 MOVESHIP%,F%
 1700 GCOL0,0:PRINTCHR$243:GCOL0,7
 1710 MOVESHIP%,F%:PRINTCHR$242
 1720 MOVESHIP%,F%
 1730 GCOL0,0:PRINTCHR$243
 1740 MOVESHIP%+20,F%+30:PRINTCHR$243
 1750 MOVESHIP%,F%+30:PRINTCHR$243
 1760 MOVESHIP%,F%+60:PRINTCHR$243
 1770 VDU4
 1780 A=1
 1790 FR%=F%
 1800 ENDPROC
 1810 DEFPROC_SHAPE7
 1820 GCOL0,6
 1830 MOVERND(500),1023:MOVERND(600)+600,1023
 1840 PLOT85,RND(700)+100,RND(400)+200
 1850 ENDPROC
 1860 DEFPROC_SHAPE8
 1870 GCOL0,6
 1880 MOVE0,1023:MOVE1279,1023:PLOT85,0,RND(400)+600
 1890 MOVE0,1023:MOVE1279,1023:PLOT85,1249,RND(400)+600
 1900 ENDPROC
 1910 DEFPROC_SHAPE9
 1920 VDU5
 1930 R=RND(800)+100
 1940 MOVER,1020
 1950 GCOL0,15:PRINT"*":MOVER,1005:PRINT"*":ENDPROC
 1960 VDU4:ENDPROC
 1970 DEFPROC_INTRO
 1980 PRINTCHR$130CHR$157
 1990 PRINTCHR$130CHR$157CHR$134CHR$141"  S P A C E
  D E B R I S !"
 2000 PRINTCHR$130CHR$157CHR$135CHR$141"  S P A C E
  D E B R I S !"
 2010 PRINTCHR$130CHR$157
 2020 PRINT''"You are in control of a galactic star  s
hip.And it is your job to shoot down  as many enemy sh
ips as possible !"
 2030 PRINT'"In the later stages of the game large  so
lid triangles appear and you can  shoot at them or
dodge them.But soon  these triangles will join togeth
er!"
 2040 PRINT'"      SHIPS = 50  POINTS"
 2050 PRINT'"  TRIANGLES = 100  POINTS"
 2060 PRINT'" FLASHING"CHR$136"*"CHR$137"= 1000 POINTS"

 2070 FORI=1TO2:PRINTCHR$130CHR$157CHR$135CHR$141"CONTR
OL CRAFT BY RIGHT JOYSTICK !":NEXT
 2080 PRINTCHR$136"  PRESS A KEY TO CONTINUE !":A=GET
 2090 CLS:PRINT''"  YOU START OF WITH 3 MEN AND A":PRIN
T'"EXTRA MAN IS AWARDED EVERY 2,000 POINTS"
 2100 PRINT''"YOUR SCORE AND NUMBER OF MEN LEFT IS
DISPLAYED WHEN YOU LOSE A SHIP !"
 2110 PRINT''"CHOSE WHICH METHOD OF CONTROL YOU WANT!":
PRINT'" 1:ABSOLUTE CONTROL.":PRINT'" 2:DIRECTION CONTRO
L."
 2120 PRINT''"INPUT NUMBER (1or2) ":I$=GET$
 2130 IFI$<>"1"AND I$<>"2"THENPRINTCHR$7:GOTO2110
 2140 IFI$="1"THEN OPTION=1 ELSE OPTION=2
 2150 PRINT''
 2160 PRINTCHR$136"  PRESS FIRE BUTTON TO START GAME !"
 2170 A=ADVAL(0)AND3
 2180 IF A=1THEN ENDPROC ELSE GOTO2170
 2190 DEFPROCSHIP_EXP
 2200 TI=TIME
 2210 MOVESHIP%+25,25
 2220 SOUND0,3,4,30
 2230 X=5:Y=SHIP%+25:Z=5
 2240 FORI=SHIP%+25TOSHIP%+25-350STEP-4
 2250 MOVEI,X
 2260 DRAWI,X
 2270 MOVESHIP%+25,5
 2280 PLOT7,I,X-16
 2290 MOVEY,X
 2300 DRAWY,X
 2310 MOVESHIP%+25,5
 2320 PLOT7,Y,X-16
 2330 MOVESHIP%+25,Z
```

BBC PROGRAM

```
2340 DRAWSHIP%+25,Z
2350 MOVESHIP%+25,5
2360 PLOT7,SHIP%+25,Z-14
2370 X=X+12:Y=Y+12:Z=Z+12
2380 VDU19,0,RND(14)+1,0,0,0
2390 VDU19,RND(7)+1,RND(14)+1,0,0,0
2400 NEXT
2410 VDU20
2420 SOUND1,3,30,1:SOUND2,3,50,1:SOUND3,3,70,1
2430 SH=SH-1
2440 IFSH=0THEN2510
2450 CLS:PRINT''''''"  SCORE = ";SCORE
2460 PRINT''"  SHIPS = ";SH
2470 FORD=1TO3000:NEXTD
2480 CLS
2490 TIME=TI
2500 ENDPROC
2510 CLS
2520 PRINT'''"  SCORE = ";SCORE
2530 PRINT''"PRESS FIRE BUTTON TO TRY AGAIN"
2540 A=ADVAL(0)AND3
2550 IF A=1THEN 2560 ELSE GOTO2540
2560 CLS:GOTO160
2570 DEFPROCEXTRA_SHIP
2580 *FX21,5
2590 SOUND1,4,200,30:SOUND2,4,230,30:SOUND3,4,250,30
2600 *FX21,5
2610 SH=SH+1:S=0
2620 ENDPROC
2630 DEFPROC_STAR
2640 SCORE=SCORE+1000:S=S+1000
2650 *FX21,6
2660 *FX21,7
2670 SOUND2,5,10,40:SOUND3,5,50,50
2680 ENDPROC
2690 MODE7:PRINT'''"DO YOU WISH:"
2700 PRINT'"1:TO END GAME."
2710 PRINT'"2:CHOSE NEW MOVMENT METHOD."
2720 ANW$=GET$
2730 IFANW$<>"1"ANDANW$<>"2"THENPRINTCHR$7:GOTO2720
2740 IFANW$="2"THENRUN
2750 END
```

Micro Tip — BBC

Label your keys

This program for the BBC micro and the Epson F/T MKIII printer allows you to set up a function key strip and print it to precisely the right size.

10-20 draw the function key strip using PROCbox.

30 allows you to enter the ten commands into array S$(x). Each string is carefully positioned in its own box. Note: maximum string length is six characters.

40 print the function key strip to the printer using PROCdump

60-70 PROCbox

80-170 PROCdump, using the bit image printing of the EPSON the required portion of the screen is dumped to the screen

180-240 PROCinput, allows you to enter the commands and also the number of times you wish to print the strip.

This is a useful utility program and can save you scribbling on odd scraps of paper etc.

J. P. Riggs

```
 1 REM THIS PROGRAM PRODUCES A
 2 REM PERFECTLY SPACED FUNCTION
 3 REM KEY 'STRIP' ON THE EPSON MX-80/FT MKIII
10 MODE4
20 FORX%=0 TO 9:PROCbox(X%*89.6+5,800,89.6,204):NEXT
30 DIM S$(10):PROCinput
40 FORX=1 TO Times:PROCdump:NEXT
50 END
60 DEFPROCbox(X,Y,T,S):MOVEX,Y:DRAWX+T,Y
70 DRAWX+T,Y+S:DRAWX,Y+S:DRAWX,Y:ENDPROC
80 DEFPROCdump
90 VDU2,13,1,27,1,65,1,8,3
100 AS%=0
110 FORL%=32TO 24 STEP-1
120   VDU2,1,27,1,76,1,0,1,5,1,1
130   FORX%=0TO319
140     FORY%=32*L% TO 32*L%-31 STEP-4
150       IF POINT(X%*4,Y%)=1 AS%=AS%+2^(ABS((Y%-32*L%+31)DIV4))
160       NEXT:VDU1,AS%,1,AS%,1,AS%,1,AS%:AS%=0
170     NEXT:VDU13:NEXT:VDU155,64,3:ENDPROC
180 DEFPROCextra(WORD)
190 VDU5:A=992-32*(3-LEN(S$(WORD))/2)
200 FOR YWORD=1 TO LEN(S$(WORD))
210   A$=MID$(S$(WORD),YWORD,1)
220   MOVE30+90*(WORD-1),A-32*(YWORD-1)
230   PRINTA$:NEXT
240 VDU4:ENDPROC
250 DEFPROCinput:FORX=1 TO 10
260   REPEAT:PRINTTAB(2,8+X);"F";X;STRING$(20,CHR$32)
270     INPUTLINETAB(5,8+X)S$(X):UNTILLEN(S$(X))<=6
280   PROCextra(X):NEXT:
290 INPUT"OK.???"D$:IFASCD$<>ASC"Y" RUN
300 PRINT'':INPUT"NUMBER "Times:ENDPROC
```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HCW

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INTRODUCTION
The object of the game is to collect treasure from a maze without losing lives and thus to achieve the highest score possible. Each item of treasure is worth a number of points, the more treasure collected, the higher the score.

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SPECTRUM
48K

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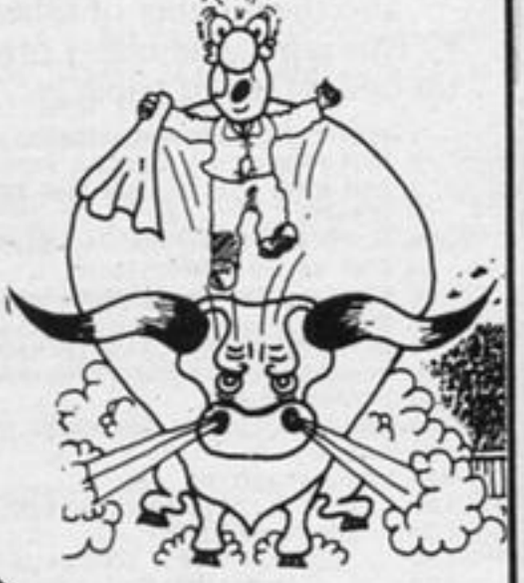

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a, b, c . . . Lift Off! Spectrum £7.95

Longman, Longman House, Burnt Mill, Harlow, Essex CM20 2JE

A reading and language development game designed to introduce children to the alphabet. It will also help with the names and sounds of letters, as well as giving scope for picture and word recognition.

After an over-long loading sequence which includes, unnecessarily, a complex Longmans/Micromega logo and a slightly animated title page, the first section begins with an upper case and lower case alphabet. Pressing any key starts. The screen displays a nicely drawn apple, the word apple in lower case, and a capital A.

A "next letter" banner invites the child to press the next letter.

At any time, pressing ENTER moves onto the second section, Lift Off! The screen shows a rocket ready, and a conveyer belt with crates. As each crate moves under it opens to reveal one of the pictures in part 1. Simultaneously a word appears. If word and picture match pressing S (for snap) loads the cargo. When six pieces have been loaded the rocket makes a spectacular lift-off.

A pair of programs for pre- and early school years well worth the money. Superb graphics, nicely laid out screen, and sound used to good effect. **C.B.**

instructions	95%
ease of use	100%
display	100%
value for money	95%

★ ★ ★ ★ ★

Fractions 1 48K Spectrum £5.95

Kemsoft, The Woodlands, Kempsey, Worcester

A teaching program for children up to eleven years, Fractions 1 had clear inlay instructions and auto-ran revealing a menu offering: Definition of Fractions, Addition, Subtraction, Multiplication and Division — plus tests after each section.

Good teaching practice of using large letters and digits to complement the simple, logical teaching steps are followed.

We are taken slowly and carefully through a good basic definition of fractions, an explanation of a "whole" to a fraction being part of a whole. Each is repeated in a different way and supported by effective use of graphics, as is the subsequent section explaining halves and onwards — shame that "fifths" appears as "fiths". Major points are emphasised by a hand with pointing finger.

After practice at typing in fractions Magic Water Jugs fill up, accompanied by sound, to appropriate levels. The test uses the Jug, and wrong answers bring more teaching, as does entering "help".

Entering "menu" returns the program to that point. Each question answered correctly brings immediate reinforcement of a noisy flashing "well done". The end shows individual scores, average score and time taken if two or more children are playing. **T.W.**

instructions	85%
ease of use	80%
display	79%
value for money	90%

★ ★ ★ ★

Clever Clogs — Partytime 48K Spectrum £6.50

Computer Tutor, PO Box 3, Neots, Cambs PE19 3NW

A program for the over threes well founded in educational practice. Provided an adult works with the young user, it will teach and help to develop concepts, unlike many so-called "educational" programs.

It deals with number and letter recognition, number concepts and bonds, adding, shape matching, spatial relationship, and can be tailored to the user's present and future development level. If this is jargon to you, then accept that it will truly benefit any child of three seven one way or another.

Entirely in BASIC, and none the worse for it, it features attractive and colourful graphics, a small creature called "Clever Clogs", and well written sound based on nursery rhymes. The ZX Printer is utilised if connected. Six different "games" are available, so there's no shortage of fun.

This program cries out for Microdrives. The authors have tried to pack in so much there is just no room for extra UDGs to improve each game. With a Microdrive, each could be loaded the RAM under software control and could be more complex. Recommended. **D.M.**

instructions	n/a
ease of use	80%
display	90%
value for money	85%

★ ★ ★ ★

Sheepdog BBC 32K £9.95

Longman, Longman House, Burnt Mill, Harlow, Essex CM20 2JE

I reviewed this some months ago as a school package and commented then that I didn't feel it would have much use in the home!

Longman obviously disagrees (or is disappointed by its school sales) and has now produced an attractive home pack with the legend "the software used in schools". It won't ever be used in mine.

The aims are quite widespread: learning concepts of space, direction, estimation, number and angle — which it does go some way towards fostering. The child, or children, has to steer sheep through a gate by commanding a sheepdog. The sheep don't often move in a straight line — which is true to life, at least — and if they hit the fence you start again.

It works well and is well error trapped so young fingers cannot do too much harm, but it is extremely repetitive.

The documentation is not a patch on the schools version which was one of its best features. I would now descibe it as adequate only. Price is still a reflection of the packaging rather than program quality and graphics are very poor — sheep heads are ampersands. **D.C.**

instructions	75%
playability	50%
graphics	50%
value for money	50%

★ ★

Speech Marks 48K Spectrum £7.95

Sinclair Research, 25 Willis Road, Cambridge CB1 2AQ

The structure and purpose of this program are similar to Sinclair's Apostrophe program to teach general punctuation, but this one deals with the punctuation of direct speech.

While the Spectrum's character set caused problems with the apostrophe, fortunately, the speech marks in Speech Marks are much easier to see.

Similar criticisms to the other program apply, however.

The presentation is fairly juvenile, though the work is quite advanced. The examples given are only cursory. The child has to work through three stages before the ZX printed certificate emerges.

Sadly, there are two major errors in this program. The examples give incorrect information about the puntuation of certain sentence structures, and this is further reinforced by the following exercises.

In addition, a bug appears to have crept into one of the exercise sentences. A vital word is missed out, leaving an incomplete sentence which can't be punctuated correctly. Until this is discovered the user cannot proceed.

Add to this a strange split layout of certain sentences, some of them excruciatingly contrived, and the result is not very good.

This program should be withdrawn and reconsidered. **D.M.**

instructions	95%
ease of use	60%
display	10%
value for money	★

Send your letter to Letters, Home Computing Weekly, No.1 Golden Square, London W1R 3AB. Don't forget to name your computer — the best letter could win £5-worth of software. Got a problem with your micro? We'll soon be starting a queries page, so send your technical questions to Queries at the above address

Sticking by the TI

So Seg Gorham of Wakefield is dismayed by TI's withdrawal from the home computer market. I, in turn, am dismayed at his defeatist attitude. My advice is: enjoy your machine to the full and ignore any criticisms of its capabilities.

I purchased our family 99/4A in October when the price initially came down to £90. Earlier in the year, Which?, the Consumer Association Magazine, carried out a review of Home Computers. Two consistently came out as best value for money in all setions tested. These were the Atari 400 and Texas TI-99/4A.

The keyboard style, ability to accept cartridges and its very looks meant that to my mind the Texas was the only computer to go for. Neither I nor the rest of my family have been disappointed and by comparison I find the Spectrums, Commodores etc. of this world highly over-rated.

While production of the 99/4A has now ceased, there are literally hundreds of games and programmes available from the many software houses and distributors throughout the country, most of whom advertise in HCW. In addition, of course, HCW usually prints an excellent weekly 99/4A program, the transference of which to computer and cassette proves most exciting.

Peripherals are still fairly easily available, some from the most surprising of sources.

While I agree with Seg that the price of the computer will fall to £50 or so (it's already available for under £80 locally), the peripherals will also come down in price as the supplier seeks to turnover stock (e.g. Speech Synthesizer now £27).

Being unemployed, I can appreciate his difficulty in obtaining a loan to buy these extras, (I'm a bank manager myself) but would suggest that he chisel away bit by bit and keep in regular contact with the stockists advertising in this magazine to ascertain current prices. In addition, he might try joining a local or national TI user group.

I am sure he would be most surprised at the help and guidance available through such groups and I would suggest that such contact might prove most beneficial in expanding his existing system.

While I am a comparatively recent addition to the 99/4A users' family, I resent Seg's comment on the apathy of TI owners.

I agree that perhaps TI's marketing was inadequate and that the computing press in general has unfairly caned and ignored the machine. However, maybe we owners are the lucky ones in that we know and appreciate all its good points.

I am certainly not apathetic and will continue to enthuse about my 99/4A. Estimates of sales of 50,000 in the UK are I believe grossly understated. I would estimate double that number. There is still therefore a considerable market available for software houses who produce new and exciting games/problems.

We should all remember, however, that as technology continues its more and more rapid advancement, within five years even the nationally esteemed BBC micro will be totally out of date.

Such is life.

No doubt by then even our family's 99/4A will have become yet another piece of attic junk. Meantime however we'll all continue to revel in the enjoyment it gives us.

On a separate matter, I find HCW's software reviews excellent. Having become a reader only in October however, there are obviously many reviews in earlier editions that I have missed.

Might I suggest a re-run of reviews for the best buys in software for say 1983 for not only the TI-99/4A but for other home computers also?

I am sure many other readers would appreciate this.

William Smith, Lasswade, Midlothian

We print an average of 35 software reviews a week — that's nearly 1,800 in a year — so the top 10 alone would fill about seven issues, with no room for anything else. Even divided by computer the space occupied in each issue would be too great to be justified.

We must confine ourselves reviewing new titles just available in the shops.

However, our sister magazine, a quarterly called Personal Software, does reprint reviews of the best software from HCW and our other computer magazines.

Each issue specialises and the next will be devoted to Sinclair computers, including software reviews, and is due on sale in four weeks.

High-score secrets 1

I am writing to inform you of some short-cuts to high-scores on I.J.K. Software's Zorgon's Revenge.

The easiest method is to let the freighters fly past you on the space mission and to just shoot the aliens to get points. This can, however, become a little tedious.

Another method is to shoot the freighter and, if you are on your last man, to then destroy your own space-craft. If you time this properly and your space-ship has half exploded when the magic stone materialises then you will find that no matter how many times you are killed, you will not end the game unless you repeat the process.

My final method for achieving high-scores is to use the jump facility to slow down lifts, lizards, bombs and birds.

Finally, one setback for all you high-scorers. When you complete the castle stage and rescue the princess the bonus is not added to your score! Is John S. Sinclair trying to diddle us?

S. Jeffery, Brackley, Northants

High-score secrets 2

After reading M. Brunning's letter (HCW 41), I thought I would tell you how to get a good start on the VIC-20's Rat Race, thanks to an apparent fault.

The third screen is a "speed run". This means that the mouse (you) goes faster and the rats (them) do not move at all, leaving you to eat the cheese.

If you fix it so that you end your game on this "speed run" then, when you start a new game, you will still go this same, fast speed, although you are no longer on a speed run. This results, as you might imagine, in you leaving the rats quite a way behind you.

This method is hard to set up, but pays off when you achieve it because it is nearly always possible to find the "two times" bonus cheese.

S. A. Paget, Uckfield, East Sussex ■

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More for your 64

With lots of useable memory, you've got a right to expect sophisticated software for the Commodore 64. Here's how the latest batch measured up . . . .

Widows Revenge £6.99

Bubble Bus, 87 High St., Tonbridge, Kent TN9 1RX

The cassette card says quite simply: "Shoot everything that moves and everything that does not". That is good advice because this is a fast moving zap-it-up game.

Once the game is loaded there's screen of instructions and then a demo. You can select two players and play then switches between them after a loss of a life. This makes the game more competitive.

The "plot" is reasonably original. You can move around the botton of the screen using the joystick.

Black beetles crawling across turn suddenly and fire at you. If you hit them they turn to eggs, hit the eggs and they turn blue requiring several hits to exterminate. Very soon the screen is littered with crawling beetles and white and blue eggs.

Occasionally the Black Widow spider appears and works it way to you. Hit it and you get a mystery score. While all this is going on an egg laying vulture is flying about. Definitely something to be avoided.

I enjoyed this game, the graphics were good and the game original without being trite. **L.C.**

instructions	70%
playability	80%
graphics	70%
value for money	70%

★ ★ ★ ★

Jumping Jack £8.95

Livewire, 198 Deansgate, Manchester M3 3NE

This game will appeal to those frog-squashing freaks who put 10 pences into Frogger in their spare time. Jumping Jack goes one step further than Frogger — you are playing with 3-D graphics.

You have to manoeuver a small green frog from one side of the screen into one of the bays at the other side within a time limit. On the way you must dodge traffic on the road and hop between logs and turtles on the river.

Further difficulties are getting the lady frog across avoiding snakes, crocodiles, sinking turtles, etc.

The graphics use full colour and on a colour TV set are excellent. On a black and white set some shades of grey blend. A typical case is logs and water. This is unfortunate. The game is still playable although not quite as good.

Viewers of Take Hart (BBC1) will recognise the background tune. Sound is good — no faults at all here.

The game allows you to control nearly all aspects of play by a selection of key presses and screen displays. Joystick is optional.

As a final extra buyers are entitled to enter a high-score competition with a CMB-1541 disk drive as first prize. **K.I.**

instructions	80%
playability	85%
graphics	85%
value for money	85%

★ ★ ★ ★ ★

Face Ache £5

Commodore, 675 Ajax Ave., Slough, Berks SL1 4BG

This game is most likely to appeal to very young children. The inlay card giving the playing instructions is over the top in jokiness. After the big build-up the game itself is a bit of a let down.

It consists of assembling an Identikit picture to recreate a face displayed on the screen for 30 seconds. You have one minute to select the correct hair style, eyes, nose, mouth and chin. When the minute is up the original face is displayed again and each feature is marked correct or wrong in a listing on the screen. You score 10 points for each correct feature.

The scoring when you repeat the game is cumulative so unfortuneately you can't play against another person with the highest score to date displayed. To compete with another you would have to have, say, five goes each and note your final scores.

The graphics seem a mixture of old fashioned PET black graphic symbols and maybe high resolution. The effect is bizarre but perhaps this was intentional to create funny faces.

One odd point in the instructions is to 'turn up your volume'. As far as I was concerned there were no sound effects. All I heard with the volume right up was background noise.

Not a very inspiring game but it might amuse those who watch Play School. **L.C.**

instructions	50%
playability	40%
graphics	50%
value for money	50%

★ ★ ★

Kick-off £6.99

Bubble Bus, 87 High St., Tonbridge, Kent TN9 1RX

Quite a good attempt at simulating the table soccer game that simulates football.

The game is the one where all the man are fixed on rods across the table. By moving the rods and spinning the men you can "kick" the football into a goal, usually your own.

The screen display gives a good representation. Two players can take part, each using a joystick, or the keyboard and one joystick. Moving the joystick allows you to move from rod to rod and to move the rod up or down. Pressing the fire button spins the men.

I found it very difficult to control the action. You lose something by only having a two dimensional picture. In playing the real table-top version the timing and positioning of the feet of the players is critical. In this simulation a lot of the feel of the game is lost.

The best bit is the introduction. It displays a crowd at a stadium complete with adverts for Bubble Bus and plays a very catchy tune that makes good use of the 64's sound facilities. In fact I had the tune playing longer than the game.

I would rather put the money towards an original table top football game. **L.C.**

instructions	60%
playability	40%
graphics	60%
value for money	50%

★ ★ ★

Gridtrap £8.95

Livewire, 198 Deansgate, Manchester M3 3NE

Based on what seems to be an original theme, the object of Gridtrap is to get to each of five bombs before they explode, without back-tracking on yourself.

To bar your way there are boots which wander around the grid, and skull and cross bones occupying various positions. You may move in four directions, leaving a trail behind you, but you may not cross this trail.

You get extra points for collecting the flags which are situated in various grid positions and for getting to the bomb on time. You lose a life if you move onto a skull and cross bones or cannot get to the bomb.

The graphics are quite good although perhaps light colours are used too much. This looks slightly unclear with a black background. The sound is average. Fortunately it is possible to turn off the irritating background noise.

The game offers you plenty of control over the playing options, via control screens and selection keys.

If you feel confident about your high-score you may enter a competition by sending off your 'magic high score number' with your name and address. **K.I.**

instructions	70%
playability	80%
graphics	80%
value for money	80%

★ ★ ★ ★

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Top Ten programs for the Dragon

1	Dragrunner	Cablesoft (-)
2	Cave Fighter	Cablesoft (-)
3	Cuthbert in the Jungle	Microdeal (-)
4	UGH	Softek (-)
5	Skramble	Microdeal (-)
6	Ring of Darkness	Wintersoft (7)
7	Frogger	Microdeal (-)
8	Space fighter	Microdeal (-)
9	Pinball	Microdeal (-)
10	Dragon Hawk	Microdeal (-)

Top Ten programs for the VIC-20

1	Arcadia	Imagine (1)
2	Gridrunner	Llamsoft (3)
3	Wizard and the princess	M.House (5)
4	Crazy Kong	Interceptor (-)
5	Abductor	Llamsoft (-)
6	Golf	Audiogenic (-)
7	Plague/ Alien Demon	K-Tel (10)
8	Junior Maths and engine shed	Commodore (-)
9	Special Pack 11	Commodore (-)
10	Grandmaster Chess	Audiogenic (-)

Top Ten programs for the Commodore 64

1	Hover Bover	Llamsoft (9)
2	Grandmaster	Audiogenic (-)
3	Matrix	Llamsoft (-)
4	Gridrunner 64	Llamsoft (10)
5	Introduction to Basic	Commodore (6)
6	Attack of the Mutant Camels	Llamsoft (7)
7	Arcadia	Imagine (-)
8	Goodness Gracious	Beyond (-)
9	Frogger	Interceptor (1)
10	Motor Mania	Audiogenic (4)

Top Ten programs for the Spectrum

1	Atic Atac	Ultimate (1)
2	Jetpac	Ultimate (9)
3	Pyramid	Fantasy (3)
4	Kong	Ocean (-)
5	Ant Attack	Quicksilva (5)
6	Penetrator	M.House (6)
7	Alchemist	Imagine (4)
8	Lunar Jetman	Ultimate (2)
9	Pool	CDS (8)
10	Harrier Attack	Durrell (-)

BEST SELLERS

Top 30

1	Hunchback	Ocean	Spectrum (5)
2	Manic Miner	Bug-Byte/ Software Projects	Spectrum (1)
3	Harrier Attack	Durrell	Spectrum (15)
4	Lunar Jetman	Ultimate	Spectrum (8)
5	Jetpac	Ultimate	Spectrum (4)
6	The Hobbit	M.House	Spectrum (2)
7	3D Ant Attack	Quicksilva	Spectrum (6)
8	Kong	Ocean	Spectrum (7)
9	Zzoom	Imagine	Spectrum (9)
10	Falcon Patrol	Virgin	CBM 64 (13)
11	Penetrator	M.House	Spectrum (-)
12	The Hobbit	M.House	CBM 64 (10)
13	Atic Atac	Ultimate	Spectrum (19)
14	Valhalla	Legend	Spectrum (3)
15	Horace goes Skiing	Psion/ M.House	CBM 64 (14)
16	Cuthbert in the Jungle	Microdeal	Dragon (18)
17	Chequered Flag	Psion	Spectrum (26)
18	The King	Microdeal	Dragon (17)
19	Digger Dan	Ocean	Spectrum (-)
20	Chuckie Egg	A&F	Spectrum (28)
21	Arcadia	Imagine	VIC-20 (-)
22	Mini-Kong	Anirog	VIC-20 (-)
23	Hunchback	Superior	BBC (12)
24	Hover Bover	Llamsoft	CBM 64 (-)
25	Jetpac	Ultimate	VIC-20 (29)
26	Scrambler	Solar	VIC-20 (-)
27	Mined Out	Quicksilva	BBC (-)
28	Crazy Kong	Interceptor	CBM 64 (-)
29	Twin Kingdom Valley	Bug-Byte	VIC-20 (30)
30	Snooker	Visons	VIC-20 (-)

Compiled by PCS Distribution(0254 691211) and sanctioned by the Computer Trade Association. Chart is for retail sales in individual outlets in theUK and Northern Ireland

Top Ten programs for the ZX81

1	Flight Simulation	Sinclair (-)
2	Football Manager	Addictive (-) PSS (9)
3	Crazy Kong	Sinclair (-)
4	Geography	Sinclair (-)
5	Maths	Sinclair (-)
6	History	PSS (-)
7	Hopper	Sinclair (-)
8	ZX Forth	Sinclair (-)
9	English Lit 1	Bug-Byte (-)
10	ZX Debug	

Games for a laugh

Our reviewers are difficult to please, but these five Spectrum games all rate four stars or more

Atic Atac 48K £5.50

Ultimate, The Green, Ashby de la Zouch, Leics. LE6 5JU

From ghoulies and ghosties and long leggedy beasties and things that go bump in the night, Good Lord deliver us.

The old Scottish prayer will need a few additions before you play Atic Atac.

The graphics are extremely good and fast moving as, using keyboard or joystick, you roam a haunted castle looking for the Golden Key before escaping I very much like the smooth way in which you move between the many cellars and rooms and the various beasties materialise in a very convincing way. My own favourites were the witches and the Red Devil (a Manchester United supporter?) in the cellar.

You take the character of either a knight, a serf, or a wizard each of whom has different weapons and access to separate secret passages. As you progress you find food and other useful objects.

The screen displays time elapsed, points scored and swag collected at the side of the main game display which has a 3D effect.

Great fun to play. Each game is different enough to maintain interest. Ultimate warn that due to the game's complexity continuous error-free operation cannot be guaranteed, but I had no problems. **D.J.**

instructions	80%
playability	85%
graphics	95%
value for money	80%

★ ★ ★ ★

Freez 'Bees 48K £5.95

Silversoft, London House, 271/273 King St, London W6

Freez 'Bees is a sort of Pac-Man on ice, which I suppose is appropriate for this time of year. Percy Penguin is being chased by snowbees! The bees look a little like squashed tomatoes to me and apparently they kill penguins.

Having loaded the tape, I decided to wait for a demo, as promised on the cassette insert, but none was forthcoming, despite waiting a long time, followed by desparate prods at the keyboard. If there is a demo mode, I certainly cannot find it.

The object of the game is for Percy to squash the snow bees by pushing ice blocks at them. But while Percy is doing this, more are hatching from eggs in the ice-blocks and it's only a matter of time before Percy goes up to the big North Pole in the sky.

Freez 'Bees — playable with keyboard or Kempston joystick — has nine skill levels, high score and hall of fame and many different icefields. Graphics and sound effects are excellent and the game is absorbing enough for one to while away a few hours. **M.B.**

instructions	40%
playability	80%
graphics	90%
value for money	90%

★ ★ ★ ★

Android 2 48K £5.95

Vortex, 280 Brooklands Road, Manchester M23 9HD

This is the first game I have seen from this company and, after playing it, I hope it will not be the last.

Written in 100 per cent machine code, Android 2 is an arcade game that would put many of the games you find in arcades in the shade.

The action takes place in three different settings: the death maze, the paradox zone and the flat-lands. It is your job to guide the Android to kill five Millitoids in each of these sections. It's not as easy as it sounds, as there are landmines and other aliens about some of which cannot be destroyed and must therefore be avoided.

The superb 3D effect in the maze and what Vortex call "three-screen multi wrap around", gives an impression of vastness which I certainly have not seen on any other game.

Although there is only the one difficulty level, this seems to have been pitched just right — difficult enough to frustrate but not so that you want to quit.

I don't know what to expect in the other two zones yet but I will play this game until I find out. **N.B.**

instructions	95%
playability	100%
graphics	100%
value for money	100%

★ ★ ★ ★ ★

De-Fusion 48K £5.50

Lyndenhurst, 38 Ashley Road, London N19

Infuriating and addictive for the same reason — I can't do it! A simple idea: guide Happy Larry to ticking bomb before its counter reaches zero or die in a spectacular explosion.

The screen display is alternate green squares, erased as you travel, with Demon Skulls (avoid) and flags (extra points) scattered around, plus a mobile purple Bovver Boot, determined to stomp you. Defuse Bomb One and the next appears, usually in the most inconvenient place.

You can travel off-screen and reappear the opposite side, but only if there is a green square left to receive you.

Keys J and K reprint squares to left or right, when desparate, but helps Boot. Clearing four bombs reaches screen two — two Boots to contend with! How many bombs in this screen, or how many more screens I can't say because the Terrible Twins catch me every time!

Keys A, Z, N and M cover directions and Kempston joystick is supported. Insert instructions are concise, typeface readable and the program tests for the correct LOADing volume.

A most professional product. If I can stop playing this, I shall be looking out for other Lyndenhurst programs. **D.C.**

instructions	95%
playability	95%
graphics	100%
value for money	95%

★ ★ ★ ★ ★

Star Trek 48K £7.95

Mikro-Gen, 24 Agar Crescent, Bracknell, Berks.

The multi-versioned Star Trek has been around for light years, but will be new to thousands of new Spectrum owners. You patrol, in the USS Enterprise, an eight by eight grid of space quadrants on a Klingon search and destroy mission.

You may jump up to six quadrants, in any direction, by inputing course and warp speed and travel quadrants by impulse power in the same way.

A short and long range scanner reveal friends and enemies in the current and surrounding quadrants; phasers, photon torpedoes and one anti-matter bomb provide armament and shields give defence.

This version offers a good "operating manual", very detailed damage and status reports; and a choice of star systems, increasingly difficult in terms of Klingons and time allowed. Failure rates "inter-galactic cook" — success could lead to my rank of Adjutant First Class.

The help command produces an abort situation, forcing you to wait for mission time to elapse. I disliked unreadable red on dark blue reports and incomprehensible "Status 0.0.0. 4" messages and no LOAD instructions but graphics and sound effects are first class. **D.C.**

instructions	80%
playability	90%
graphics	90%
value for money	75%

★ ★ ★ ★

'Save as you learn' software scheme

I am always on the lookout for new, significant and especially low cost educational programs. This week I can tell you about some that are all three at the same time.

Would you buy more educational programs if they were worthwhile and only cost $10 a piece? That is what School and Home CourseWare is hoping that many schools and individual users will be doing this year. By subscribing to its Software Library Series, purchasers can receive 10 programs for £99.95 during the upcoming school year. The Mastery Software line includes 60 new packages for the Apple, PET, Commodore 64, TRS-80 and Atari computers.

If purchased in single quantities, the programs would cost $24.95 each, so subscribing can amount to quite a saving. The subject matter in the Mastery series is sub-divided into five categories: elementary maths, intermediate maths, elementary reading/English, intermediate reading/English, and general curriculum. All purchasers receive a 30-day money back guarantee.

Conduit, a non-profit corporation that publishes educational software, has made educators an offer they should not be able to refuse. Due to a donation of 5,000 5.25in floppy discs from Verbatim Corp., Conduit is distributing samples of various programs on demo discs to colleges, computer-education groups and school teachers. The programs are portions of Conduit software on various subjects including chemistry, foreign languages, English, biology, and learning games.

Apparently the firm has already given away over 1,000 sample discs at an educational computer conference and definitely considers this program to be a success. If you are an educator, send some proof of that plus (at least) $2 to cover postage and handling to receive a copy of the demo disc — if there are still some left. You can check and get details from Conduit, P.O. Box 388, Iowa City, IA 52244. Happy sampling.

★ ★ ★ ★

Here's an update on a survey first reported here last spring. Forget about Saturday Night Fever, it's time for Computer Fever. According to the reporting firm, Teen-Age Research Unlimited of Lake Forest Illinois, roughly five per cent of the 1,500 teens surveyed bought a home computer in the last year, which is about three per cent more than did in the previous survey. About 10 per cent indicated that they had spent some time with a computer in the previous week. Approximately one and one half times as many boys use computers than girls. About 11 per cent of those teens surveyed indicated that they were planning to buy a computer in the next year. When asked how they might spend an extra $50, roughly 11 per cent indicated that they would buy computer programs and cassettes.

★ ★ ★ ★

Remember a while back I mentioned that American television was about to have inflicted on it a show called Whiz Kids which would feature a bunch of computer-using kids fighting crime by the use of their wits rather than fists? Well it has been on since late September, and it is hard to call the show a success.

I suppose I should not admit this, but I have never watched it, not being much of a vidiot. However, the show is reported to have a 12 rating on a 20 share, which in English means that 12 per cent of all households were watching the show and that 20 per cent of all sets on at the time were tuned to the show. However, the 12/20 rating is nothing to get all that excited about. In fact it is likely that if the show's ratings do not improve, it will be cancelled.

One of the "kids" is actually a computer buff already and is in the process of designing an adventure game for resale. He is hoping that if the series doesn't do well he will still have his game royalties to fall back on. If the LA-based software company, called Mind Games, releases a game called Desecration, you'll know who wrote it — Jeffrey Jacquet of Whiz Kids fame.

***Too little too late dept.** Just off the press, and just what we need: A firm called FlipTrack Learning System has just released a product recorded on audio cassette called How to Operate the TI-99/4A. Clearly, the company was working on the final product when TI announced it was getting out. Oh well, can't win 'em all. In case you can't wait to buy one, the tape costs all of $16.95. Perhaps FlipTrack will do better with their audio lessons on How to Operate the Commodore 64. That tape costs $29.95. FlipTrack is based in Glen Ellyn, Illinois. Write soon before they run out of the TI version (excuse me while I remove my tongue from my cheek).*

★ ★ ★ ★

Word Wizard is a new word processor I have been learning about for the VIC-20.

It comes on a cassette and can store data files on either tape or disc in the same format that is used by the WordPro business word processors which run on the larger Commodore machines. The advantage of this is obvious.

The text editor is very easy to use and takes good advantage of the special function keys. In fact, the editor uses the edit keys in exactly the same way as does Commodore with respect of programming in BASIC. Using the program is made easier due to the inclusion of a template that fits over the function keys and indicates what each does when pressed.

I feel the major drawback of this program is its inability to link files after they are created. This means that it will be difficult to create long document without lots of thought as to where to insert page breaks. If what you want, however, is something that will serve primarily as a tool to help you write letters, homework, short term papers and so forth, this program may serve you quite well. The documentation that accompanies the program is quite short (about 16 pages) but it is clear and full of examples.

Another drawback is the fact that the program must always be loaded from tape, a slow process indeed. I am not enough of a VIC expert to know if it could be uploaded to disc, but I would imagine this would not be very difficult to accomplish. The program is very "goof-proof"; its reviewer could not force it to fail although he tried.

Compare this program to your first typewriter; it works, it is simple, inexpensive, and a whole lot faster than doing it by hand! List price is $34.95, requires a VIC-20 with at least 8K RAM. Available from Computer Applications Inc., 13300 SW 108 Street Circle, Miami, Florida 33186, (305) 385-4277.

★ ★ ★ ★

In the market for a good low cost printer? Epson has been introducing a lot of new printers lately, and changing the prices of many of their current models. Perhaps this should clear up some of the confusion. There are now the models MX-80, MX-80FT, MX-100, RX-80, RX-80FT, FX-80, and FX-100. As you can see, there are three basic groups: MX, RX, and FX. The difference is mainly in speed. The MX series print at 80cps, the RX at 100cps, and the FX at 160cps.

The MX-80 and RX-80 have 80 column capabilities and tractor feed, but not friction feed. This means that you cannot use single feed (e.g. for letterheads). The FT indicates the presence of both friction and tractor feed ability. The MX-100 is just the same except with 15" wide carriage, enabling it to print more than 80 columns. No RX-100 has been announced as yet.

The FX-80 is also just 80 column printer but it has both friction and tractor feed. The tractor feed has a limited adjustment range from 8" to 10". An extra cost tractor is available to allow it to adjust down to 4". The FX-100 is just like the MX-100 but prints up to twice as fast.

That's it for now. See you next week.

Bud Izen
Fairfield, California

TI-99/4A PROGRAM

Fed up with slow TI games? This one's really fast

Clever programming has squeezed more speed out of the standard TI-99/4A. Gareth Thomas explains what he did and how to play the game

How it works

10-90 initialises variables, set up screen, print titles
100-310 main loop to move copter
320-350 check if copter has hit building
360-550 screen set up, define characters, set colours
570-610 print buildings in random positions
640-650 set up heading, GOSUB to print it
690-790 FOR...NEXT loop for bomb etc
810 explosion if copter hits building
820-830 print explosion
880-890 check if bomb has hit a tower
910-920 bomb explodes on tower
1000-1210 copter crashed — game ends
1220-1250 print headings
1300-1500 success — game ends
1350 calculate score dependent on level and bombs left
1420-1440 bonus score
1760-1820 high-score routine

Oh, no! you may say — not another version of Bomber. But this one is different.

I was fed up with slow BASIC games and since I liked the idea of Bomber I decided to write my own version and to make it run much faster than those I had seen.

The result even surprised me as it's quite fast.

I have used many techniques to speed up the program, using as few IF...THEN statements as possible and only one random number generator (as a user-defined function).

Nested FOR...NEXT loops move the 'copter, eliminating the need to test whether it is off the screen. These are also much faster than C=C+1 and IF C=10 THEN and so on.

The program is also structured as far as is possible.

The game itself is slightly different from the familiar version:

You are carrying thermo-dynamic bombs to an air force base when you start to lose height off the city and have to bomb the buildings to clear a safe landing area.

But the bombs are old and unstable and may explode without hitting anything... which can be quite frustrating.

Sometimes a building will have to be bombed twice to destroy it totally.

Any key may be used to drop the bombs, there is a bonus system if a screen is cleared, a high-score routine and a level selection at the beginning.

Good luck.

```
10 REM  CRAZY COPTER
20 REM    FOR H.C.W
30 REM   BY GARETH THOMAS
40 DEF RD(A)=INT(RND*A)+1
60 BST=0
70 N$="G.T"
80 SC=0
90 GOSUB 1520
100 GOSUB 370
110 GOSUB 140
120 REM   MAIN LOOP
130 REM  MOVE COPTER
140 CALL KEY(0,K,S)
150 IF S=0 THEN 140
151 CALL HCHAR(4,2,32,28)
160 FOR X2=2 TO 22
170 FOR Y2=3 TO 30
180 CALL KEY(0,K,S)
190 IF S=1 THEN 200 ELSE 220
200 IF BMS<1 THEN 220
210 GOSUB 670
220 CALL HCHAR(X2,Y2-1,32)
230 CALL HCHAR(X2,Y2,103)
240 IF X2>12 THEN 330
250 NEXT Y2
260 CALL HCHAR(X2,Y2-1,32)
290 NEXT X2
300 GOSUB 1260
310 GOTO 80
320 REM  CHECK FOR HIT
330 CALL GCHAR(X2,Y2+1,A)
340 IF A=151 THEN 360
350 GOTO 250
360 GOSUB 810
370 RANDOMIZE
380 REM  SET UP SCREEN
390 CALL CLEAR
400 CALL COLOR(16,1,1)
410 CALL COLOR(14,2,5)
420 CALL SCREEN(6)
430 CALL VCHAR(1,32,155,24)
440 CALL VCHAR(1,1,155,24)
450 CALL VCHAR(1,31,155,24)
460 CALL COLOR(1,5,5)
470 CALL COLOR(15,2,16)
480 CALL COLOR(13,3,5)
490 CALL COLOR(10,14,5)
500 CALL COLOR(9,11,5)
510 CALL CHAR(151,"FF95FFA9FFA5FFA1")
520 CALL CHAR(129,"FFFFFFFF00000000")
530 CALL CHAR(143,"0000000000000010")
540 CALL CHAR(104,"49AA3C5F389310")
550 CALL CHAR(103,"007F089EFD1E")
560 REM  PRINT BUILDINGS
570 CALL HCHAR(23,3,129,27)
580 FOR G=3 TO 29
590 A=RD(8)
600 CALL VCHAR(23-A,G,151,A)
610 NEXT G
620 X=1
630 Y=3
631 PS=0
640 M$="C R A Z Y  C O P T E R  "
650 GOSUB 1220
651 PS=PS+3
652 M$="Press any key to start  "
653 GOSUB 1220
660 RETURN
670 BMS=BMS-1
680 REM  DROP BOMB
690 FOR X3=X2+2 TO RD(10)+11
700 IF X3>12 THEN 880 ELSE 710
710 CALL HCHAR(X3-1,Y2-1,32)
720 CALL HCHAR(X3,Y2-1,143)
730 NEXT X3
740 CALL SOUND(-600,-6,0)
750 CALL HCHAR(X3-1,Y2-1,104)
760 FOR D=1 TO 100
770 NEXT D
780 CALL HCHAR(X3-1,Y2-1,32)
790 CALL VCHAR(X3,Y2-1,32)
800 RETURN
810 CALL SOUND(1500,-7,0)
820 CALL HCHAR(X2,Y2,104)
830 CALL HCHAR(X2,Y2+1,32)
840 FOR D=1 TO 400
850 NEXT D
860 CALL HCHAR(X2,Y2,32)
870 GOSUB 1000
880 CALL GCHAR(X3,Y2-1,B)
890 IF B=151 THEN 910
900 GOTO 710
910 CALL SOUND(600,-6,0)
```

TI-99/4A PROGRAM

```
 920 CALL HCHAR(X3-1,Y2-1,104)
 930 FOR D=1 TO 100
 940 NEXT D
 950 ER=RD(5)
 960 CALL VCHAR(X3,Y2-1,32,ER)
 970 SC=SC+ER
 980 CALL HCHAR(X3-1,Y2-1,32)
 990 RETURN
1000 CALL SOUND(500,150,0)
1010 CALL SOUND(1000,110,0)
1020 GOSUB 1030
1030 CALL CLEAR
1040 CALL SCREEN(2)
1050 FOR COL=1 TO 9
1060 CALL COLOR(COL,16,2)
1070 NEXT COL
1080 SC=(SC+BMS)*L
1090 IF SC>BST THEN 1100 ELSE 1120
1100 BST=SC
1110 GOSUB 1760
1120 PRINT TAB(2);"BAD LUCK YOU CRASHED"::
1130 PRINT TAB(2);"YOU HAD";BMS;"BOMBS LEFT"::::
1140 PRINT TAB(4);"YOU SCORED ";SC
1150 PRINT ::
1160 PRINT "BEST SCORE IS";BST;"BY ";N$
1170 PRINT ::
1180 PRINT "PRESS ANY KEY FOR NEW GAME"::
1190 CALL KEY(0,K,S)
1200 IF S=0 THEN 1190
1210 GOTO 80
1220 FOR T=1 TO LEN(M$)
1230 CALL HCHAR(PS+1,Y+T,ASC(SEG$(M$,T,1)))
1240 NEXT T
1250 RETURN
1260 FOR T=1 TO 10
1270 READ P
1280 CALL SOUND(-200,P,0,P+1,0)
1290 NEXT T
1300 CALL CLEAR
1310 CALL SCREEN(2)
1320 FOR COL=1 TO 9
1330 CALL COLOR(COL,16,2)
1340 NEXT COL
1350 SC=(SC+BMS)*L
1360 IF SC>BST THEN 1370 ELSE 1380
1370 GOSUB 1760
1380 PRINT TAB(2);"WELL DONE YOU'VE"::
1390 PRINT TAB(2);"MADE IT "::
1400 PRINT TAB(2);"YOU SCORED";SC
1410 PRINT ::::::
1420 BON=RD(500)+100
1430 PRINT TAB(2);"YOU RECEIVE A BONUS OF";BON
1440 SC=SC+BON
1450 BST=SC
1460 PRINT ::
1470 PRINT TAB(2);"PRESS ANY KEY TO PLAY AGAIN"::
1480 CALL KEY(0,K,S)
1490 IF S=0 THEN 1480
1500 RETURN
1510 DATA 300,400,500,600,500,400,300,200,600,200
1520 CALL CLEAR
1530 CALL SCREEN(2)
1540 FOR COL=1 TO 9
1550 CALL COLOR(COL,8,2)
1560 NEXT COL
1570 PRINT TAB(4);"C R A Z Y  C O P T E R "::::::
1580 PRINT TAB(3);"PRESS:-"::
1590 PRINT TAB(4);"1)FOR 200 BOMBS"::
1600 PRINT TAB(4);"2)FOR 150 BOMBS"::
1610 PRINT TAB(4);"3)FOR 100 BOMBS"::
1620 PRINT TAB(4);"4)FOR 75 BOMBS"::::::
1630 CALL KEY(0,K,S)
1640 IF S=0 THEN 1630
1650 L=K-48
1660 IF (L<1)+(L>4)THEN 1630
1670 ON L GOTO 1680,1700,1720,1740
1680 BMS=200
1690 RETURN
1700 BMS=150
1710 RETURN
1720 BMS=100
1730 RETURN
```

```
1740 REM  HIGH SCORE
1750 RETURN
1760 CALL SOUND(1000,300,0,400,0,500,0)
1770 PRINT TAB(2);"WELL DONE!!"::
1780 PRINT TAB(2);"YOU HAVE TODAY'S BEST SCORE"::
1790 PRINT TAB(2);"PLEASE ENTER YOUR NAME"::::
1800 INPUT N$
1810 PRINT ::::::::::::::::::::::::
1820 RETURN
```


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ONE MAN'S VIEW

Games: an addict's confession

A man, let us call him Mr ZX, sits alone in a darkened room, staring vacantly at the corner TV set. A machine is sitting on the coffee table in front of him and his index fingers stab at it compulsively.

To look at, Mr ZX is a wreck. Grubby clothes hang from his emaciated frame. His eyes are sunken and without expression. His cheeks are hollow. Several days' growth of unkempt beard covers his chin.

Mr ZX was once a successful businessman. Now, like thousands of others, he is a comp: ter games addict.

"It began in the early 70s," he said. "I bought a pocket calculator. No harm in that. I could work out the family budget and the accounts in the office. Then, one terrible day, I found I could make up words if I turned it upside down.

"That wasn't too bad to start with; just a laugh in the office. But then I found I was laying under the bedcovers at night trying to think up new words. 'Hello' and 'O Hell' just wasn't enough.

"In those days I still had some willpower and I didn't replace the batteries when they ran down. I had a few withdrawal symptoms and my wife suggested a break at the seaside.

"It was a big mistake. We went to Blackpool and, like everyone else, toured the amusement arcades. There was a game where you had to knock a ball across a TV screen. I dumped the family and spent all our holiday money on it.

○ ○ ○

"Eventually we got home and I stayed in all the time. I started smoking. It was coming up to Christmas when I started to get better. I felt well enough to go shopping. It's a pity I recovered.

"They were selling those games in the shops. I bought one. I told my wife it was for the kids, but I could see she didn't believe me.

"She was right, of course. The kids never got a look in. I used to send them to bed and sit up all night playing this game. It wasn't easy, either. It really needs two players.

"Then along came Clive Sinclair. I bought one of his computers. I couldn't believe all the games I could play in the privacy of my own home. I still used to go out for a while: to buy computer magazines. Now I get all my games by mail order. I never see the light of day.

"My wife took the kids back to her mother's about six months ago. I've lost my family. I've lost my business. I've lost everything. I...."

○ ○ ○

He broke off at this point and I wouldn't get him to talk any more. I sat with him for a while as he waited for another game to load into the computer. Then I left.

I looked back at the door, just as he executed a neat dart to the left, dodged the enemy lasers and shot the mothership for a surprise bonus.

Nick Morloch

● **This space is for you to sound off about the micro scene, to present bouquets, to hurl brickbats, or just to share your opinions or experiences. Contributions from individuals earn a fee. Send your views to Paul Liptrot, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB.**

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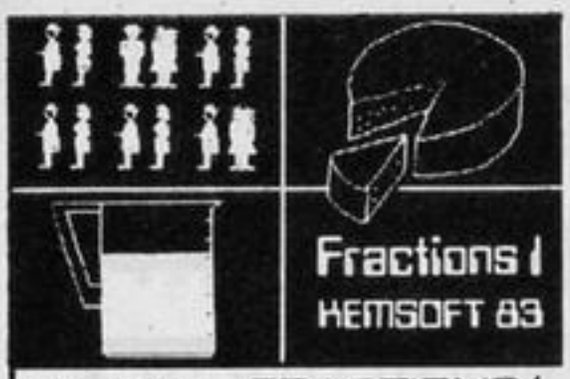

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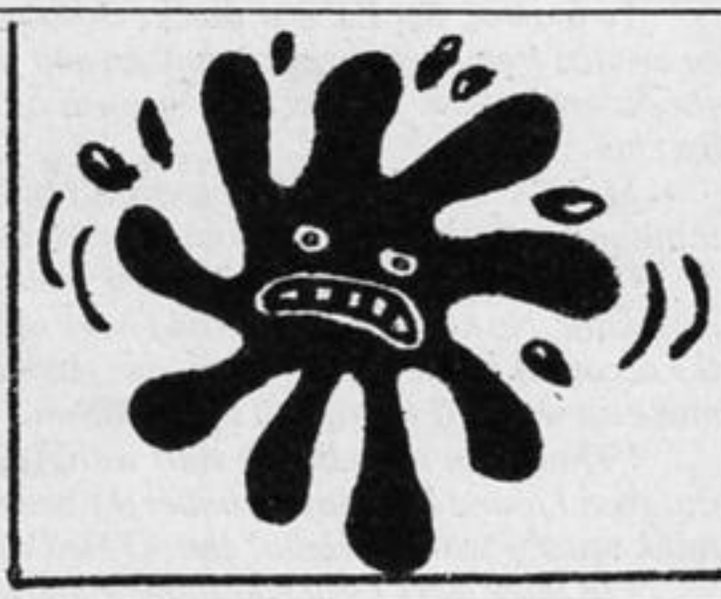

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If your collection of albums needs to be brought to order, you need my record library program.

It runs on the VIC-20 with a minimum of 8K of expansion and you use it to build a file.

All you do is enter the names of artist and album and the album tracks. You also have to give the number and side of the data cassette you are using for storage.

How it works

4-7 wait message
80-100 set up
110-360 display menu
370-610 routine to enter/amend artists' and album names on selected cassette number
620-790 display artists' and album names on sides A and B of cassette numbers 1-X
800-890 search for blank cassette number in a file, display number
900-1110 SAVE data to tape
1120-1180 warning routine — comes into action if you select option 2, SAVE RECORDS, When you have either not LOADed a file from cassette or not yet created a file in memory
1190-1380 LOAD data from tape
1390-1650 change or create titles to selected cassette number
1660-1790 search for track name
1800-1940 display any match
1950-2100 screen pattern before displaying match
2120-2210 set up computer with new file in memory
2220-2350 input routine. Note: cursor here is a left arrow
2360-2410 change border colour while menu is on display
2420 line used to SAVE program to tape

Here's how to record details of your albums:

- Select option 7, START A NEW FILE, from the menu
- Option 3, ENTER ARTIST. First type in the number of the blank data cassette, then artist name for side A followed by album name for side A. Do the same for side B
- Option 4, ENTER TITLES. Type your data cassette number again, followed by side A or side B and then all the titles on the album — you are allowed a maximum of 15
- Option 2, SAVE RECORDS. Insert your data cassette into the recorder and, using the counter, ensure you leave a gap of 100 digits between each album file. When ready, press RETURN and your file will be SAVed onto the tape

Variables

SP$ space filler
V sound volume when LOADing and SAVEing data
S2 sound
SC screen/border colour
CA important: sets up how many cassettes on each file
RL% flag to check if any data is in memory
S% cassettes sides A or B
FL% flag to check for cursor keys pressed
POKEs: 198,0 clears keyboard buffer; 36865,X sound effects

How to use the data:

- LOAD the program. Select option 1, READ RECORDS, and insert your chosen data cassette into the recorder, positioned to the correct file with the tape counter. Press RETURN and the computer will read that file into memory
- Now you can amend any part of the file using the menu options
- Option 8 will display cassette numbers, artists and album names from 1 to X (the number depends on your computer's memory)
- Option 5, SEARCH FOR TITLE. Enter the track or album name and the computer will find it and display the cassette number and side. It will ask if the match is correct and, if not, continue the search. If you enter a single letter it will search for a title beginning with that letter
- Option 7 will display any available space on your data cassette

As usual, the control characters used in Commodore's BASIC, are explained in REMarks above the lines in which they appear. These REMs should not be entered.

To SAVE the program to tape, type RUN 2420 while in command mode only.

Note: lines between 7 and 80, which named the author etc, have been removed to save space.

```
 4 REM [CLR][4CRSR DOWN]
 5 PRINT"■■■
```

VIC-20 PROGRAM

```
940 A$="" PRINT"■SET UP TAPE RECORDER  TO POSITION"
950 PRINT:PRINT"     WHEN READY        PRESS RETURN KEY ?";:
960 GOSUB2220
970 OPEN 1,1,1,"RECORD FILE"
975 REM[CLR] [RVS ON] [BLK] [8 CRSR DOWN]
980 PRINT"■■■
```

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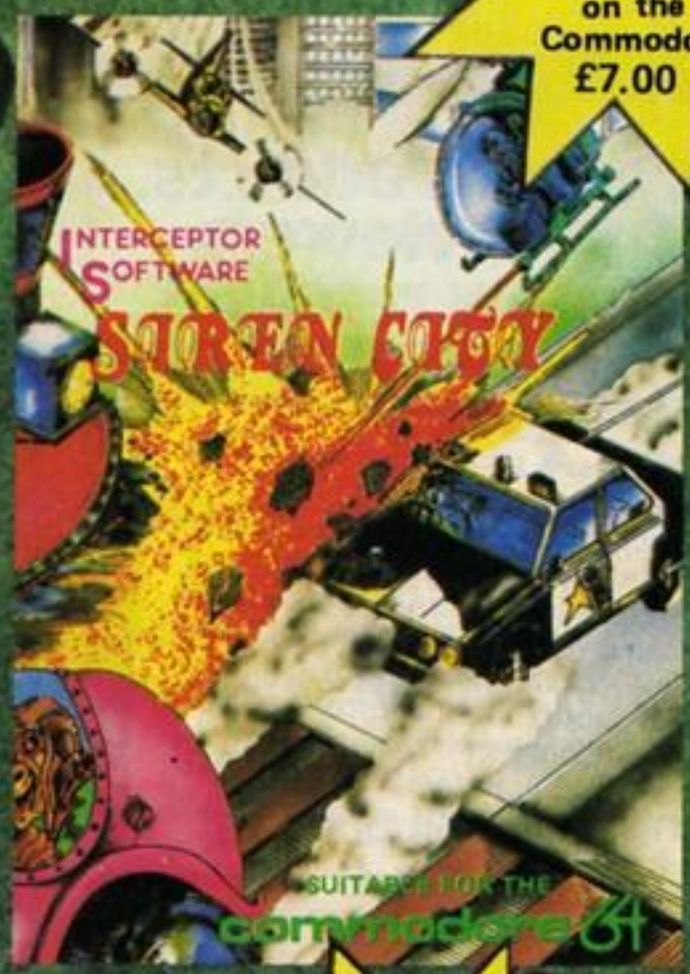

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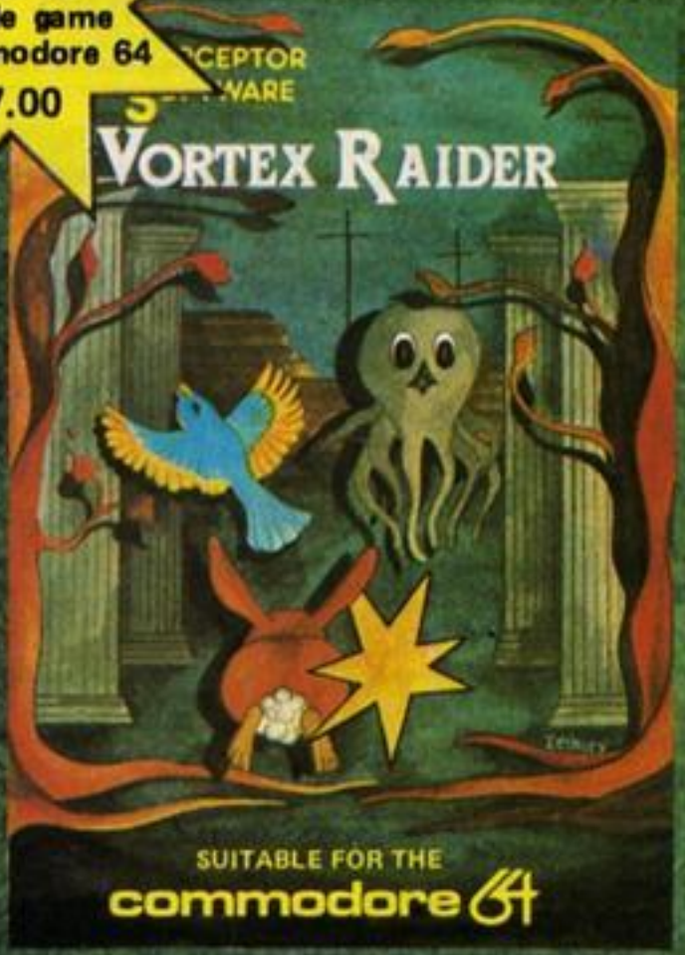

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Now get out of these . . .

A page for adventure addicts. Here's what our reviewers thought of five new releases

Land of Sagan 48K £6.95

Mikro-Gen, 24 Agar Crescent, Bracknell, Berks

I would describe this game as a totally graphic adventure game, as opposed to a text or text/graphic game. By that I mean that you move a figure, supposedly you, about the screen, upon which is printed the scenario for the game.

The only test is a sort of situation report, a sitrep we called it in the army. For instance, you will be informed that you have mat, or surprised, an enemy. You may then be given the option to fight or run.

Throughout your wanderings you may chance upon treasure or various objects whereupon a message appears on the screen to let you know and periodically you are brought up to date with your situation.

After being wounded you can make your way to the "stream" which meanders across the screen from east to west, or maybe it's west to east. Whatever, the stream heals all wounds.

In spite of my description, the game does not represent the quality of games that are capable of being produced for the Spectrum. The graphics movement has obviously been produced by a BASIC program, so slow and jerky they reminded me very much of very early ZX81 games.

After a very determined effort on my part, I found the game dull and uninteresting. **B.B.**

instructions	60%
playability	40%
graphics	40%
value for money	30%

★ ★

Ghost Town 48K £5.95

Virgin Games, 61-63 Portobello Road, London W11 3DD

Ghost Town is an adventure game set in and around a desolate old mining town and the parched Californian desert.

The gold rush is over, but there's a forgotten gold mine out there somewhere. The object is to find that hidden gold and make sure your way back to the town square with the loot (I would have thought the nearest saloon more appropriate). You have to piece together the clues to find El Dorado. First you nedd the map — that's quite easy, but the rest of the clues will really have you scratching your head. I won't spoil things, but let's just say that there are surprises a 'plenty in store.

Ghost Town is well though out. The screen display creates the right sort of atmosphere and is cleverly designed. The program will accept instructions from the adventure in three forms: as two-word sentences, as single words or as single letter abbreviations. Your commands are not limited by the program's extensive vocabulary.

The instructions provided are perfectly adequate but, if anything, the cassette presentation is a bit over the top. Hitherto I haven't been an avid adventurer, but this game had me enthralled. **C.C.**

instructions	80%
playability	90%
graphics	80%
value for money	90%

★ ★ ★ ★

Pitfall 48K £6.95

Infinite, 73 Alcester Road, Moseley, Birmingham

One of the main disadvantages of all the adventure games I've seen so far is that you need to be good at spelling and reading to enjoy them. This cuts out younger users. Here's an adventure which deals with the problem.

The game commands are entered with a single key, the screens are illustrated in a colourful, if idiosyncratic, way and the reading is simple.

It is set in a complex of stairs, caves, rooms and passages. You start at the twentieth level below ground and, gathering treasures, spell power and strength as you go, you climb to ground level. So far so good!

You will, however, encounter problems in the shape of more than 100 different rats, mummies, dwarves etc, not to mention terra-bats! These delightful furry fiends live on the surface and, just when you think you're beginning to win, they leap upon you, stealing your treasure and sending you back to level 20. Such is life!

I don't think adventure addicts will find anything new here, but if you find them too hard, or boring, or if you're new to adventuring, you may well enjoy this. **D.M.**

instructions	100%
playability	100%
graphics	60%
value for money	85%

★ ★ ★ ★

Space Island 48K £6.95

Terminal Software, 28 Church Lane, Prestwich, Manchester M25 5AJ

Your objective in this real-time adventure is to find the lost control tape and load it into the hidden timespreader, on the planet Zyro.

You have control of one android, whose location is shown on the screen, while points of interests are represented as dots. Most of the locations are different for each game. The robot only has a limited energy so you must eat, drink and sleep when you have the opportunity.

The game's limitations are shown by its vocabulary — a mere 19 commands, entered by single letter codes. Movement is by cursor keys. No hints are given, although you could cheat by listing the program.

There are some large areas on the screen with no interesting locations to travel through. When you do reach a point of interest there is a noticeable pause before the required information is printed — the penalty of writing in BASIC. There is also a fair wait for a new game to be generated.

There is a bug in the program. So far it has stopped twice with an error message. It is amazing that this has escaped Terminal's attention because it occurs early on in the game.

Space Island is easier than most other Spectrum adventure, so if you only want a single adventure it represents a fair buy — if the bug is sorted out. **S.E.**

instructions	80%
playability	50%
graphics	50%
value for money	35%

★ ★

Urban Upstart 48K £6.50

Richard Shepherd, Elm House, 23-25 Elmshott Lane, Cippenham, Slough, Berks

This is very different; the world's first seedy software! An illustrated adventure, Urban Upstart is set in Scarthorpe, "the sort of town where even the dogs carry flick-knives!" You have to find your way out of this menacing urban jungle.

You start, at 3am, in a house on Grime Street opposite Arthur's Bookstore, just south of Cut-Throat Alley! Get the picture? Every twist and turn leads you into a wasteland of decay and ever more sordid scenarios.

In common with the best adventures, this has a subtle thread of humour running through it. The first time I played it, I was astounded to find myself arrested for indecent exposure. While languishing in jail, I had time to work out why. Earlier, I had found a pair of dungarees, taken them, gone on to Grime Street and discovered an umbrella. Having failed to don the trousers, I bent down to pick up the brolly and . . . whoops!

Locations are quickly drawn, the illustrations are good. You have the usual "fun" trying to work out the vocabulary, but don't input any naughty words or the police will swoop, even if you happen to be in hospital.

Great fun and highly recommended, but don't forget your trousers! **D.M.**

instructions	100%
playability	90%
graphics	100%
value for money	85%

★ ★ ★ ★ ★

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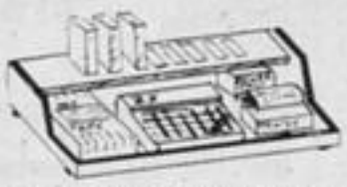

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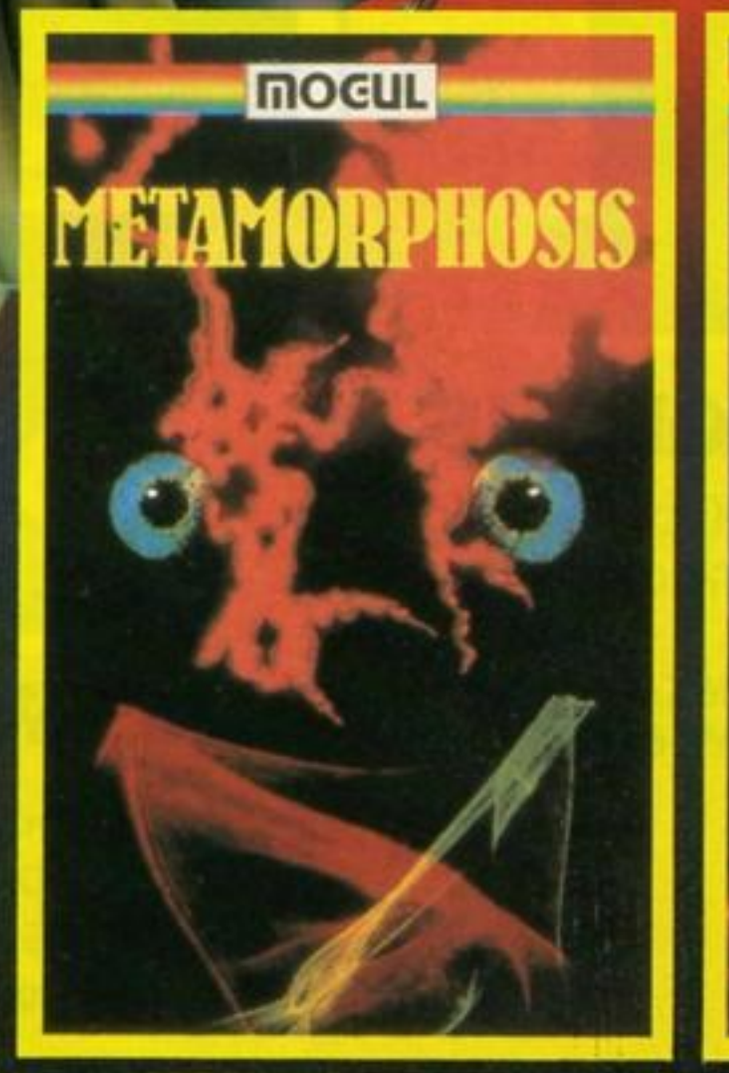

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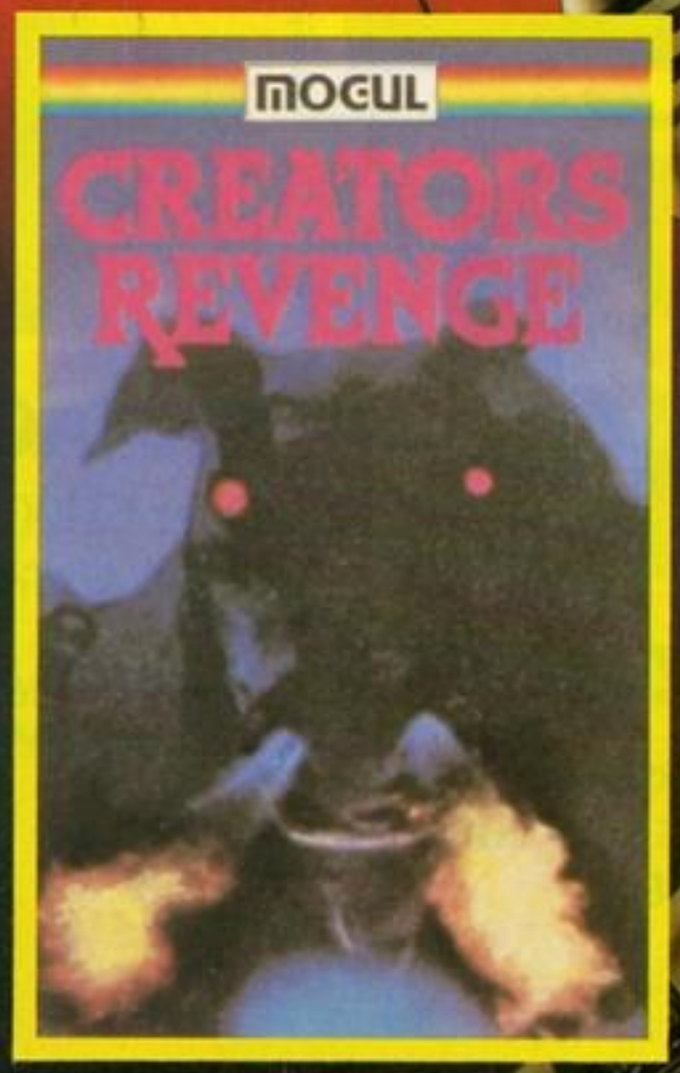

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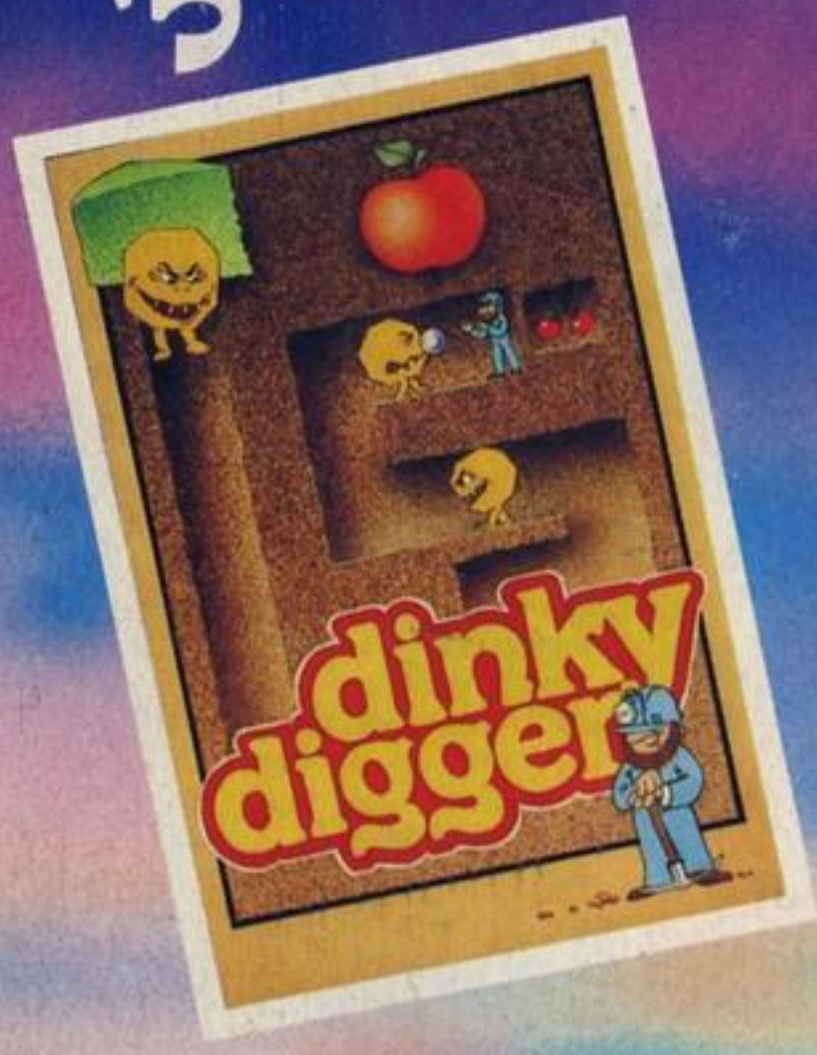

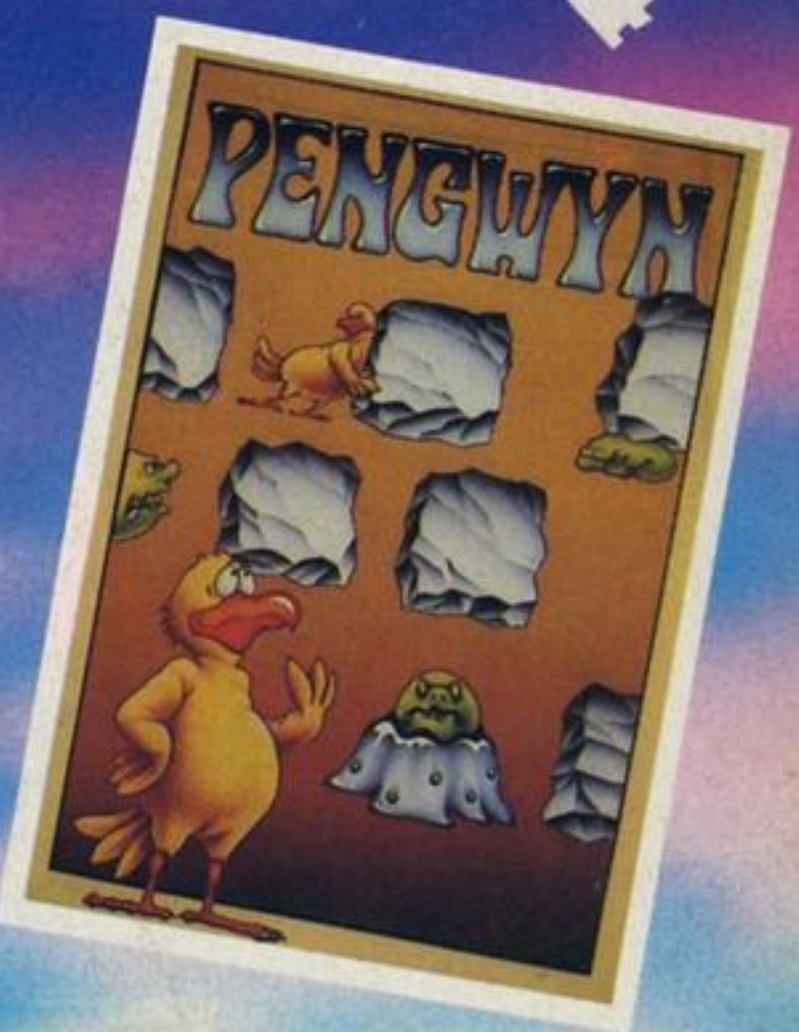

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